Common Preventive Maintenance Techniques for Operating Systems

OS Preventive Maintenance Plan

To ensure that an OS remains fully functional, you must implement a preventive maintenance plan. A preventive maintenance plan provides the following benefits to users and organizations:

- Decreased downtime

- Improved performance

- Improved reliability

- Decreased repair costs

Preventive Maintenance Planning

Preventive maintenance plans should include detailed information about the maintenance of all computers and network equipment. The plan should prioritize equipment that would affect the organization the most if it goes down. Preventive maintenance for an OS includes automating tasks to perform scheduled updates. Preventive maintenance also includes installing service packs that help keep the system up to date and compatible with new software and hardware. Preventive maintenance includes the following important tasks:

- Hard drive backup

- Hard drive defragmentation

- Updates to the OS and applications

- Updates to antivirus and other protective software

- Hard drive error checking
- Perform preventive maintenance regularly, and record all actions taken and observations made. A repair log helps you determine which equipment is the most or least reliable. It also provides a history of when a computer was last fixed, how it was fixed, and what the problem was.
- Some preventive maintenance should take place when it causes the least amount of disruption to the people who use the computers. This often means scheduling tasks at night, early in the morning, or over the weekend. There are also tools and techniques that can automate many preventive maintenance tasks.
- **Security**

- Security is an important aspect of your preventive maintenance program. Install virus and malware protection software, and perform regular scans on computers to help ensure that they remain free of malicious software. Use the Windows Malicious Software Removal Tool to check a computer for specific, prevalent malicious software. If an infection is found, the tool removes it. Each time a new version of the tool is available from Microsoft, download it and scan your computer for new threats. This should be a standard item in your preventive maintenance program, along with regular updates to your antivirus and spyware removal tools.
- **Startup Programs**
- Some programs, such as antivirus scanners and spyware removal tools, do not automatically start when the computer boots. To ensure that these programs run each time the computer is booted, add the program to the Startup folder of the Start Menu. Many programs have switches to allow the program to perform a specific action, start up without being displayed, or go to the Windows Tray. Check the documentation to determine if your programs allow the use of special switches.

Updates

Device Driver Updates

Updating device drivers regularly should be part of your preventive maintenance program to ensure that your drivers are always current. Manufacturers occasionally release new drivers to address issues with the current drivers. Check for updated drivers when your hardware does not work properly or to prevent future problems. It is also important to update drivers that patch or correct security problems. If a driver update does not work properly, use the Roll Back Driver feature to revert back to the previously installed driver.

Operating System Updates

Microsoft releases updates to address security issues and other functionality problems. You can install individual updates manually from the Microsoft website or automatically using the Windows Automatic Update utility. Downloads that contain multiple updates are called service packs. A service pack usually contains all the updates for an OS. Installing a service pack is a good way to bring your OS up to date quickly. Set a restore point and back up critical data prior to installing a service pack. Add OS updates to your preventive maintenance program to ensure that your OS has the latest functionality and security fixes.

Windows Update

Firmware Updates

Firmware updates are less common than driver updates. Manufacturers release new firmware updates to address issues that might not be fixed with driver updates. Firmware updates can increase the speed of certain types of hardware, enable new features, or increase the stability of a product. Follow the manufacturer's instructions carefully when performing a firmware update to avoid making the hardware unusable. Research the update completely because it might not be possible to revert to the original firmware. Checking for firmware updates should be part of your preventive maintenance program.
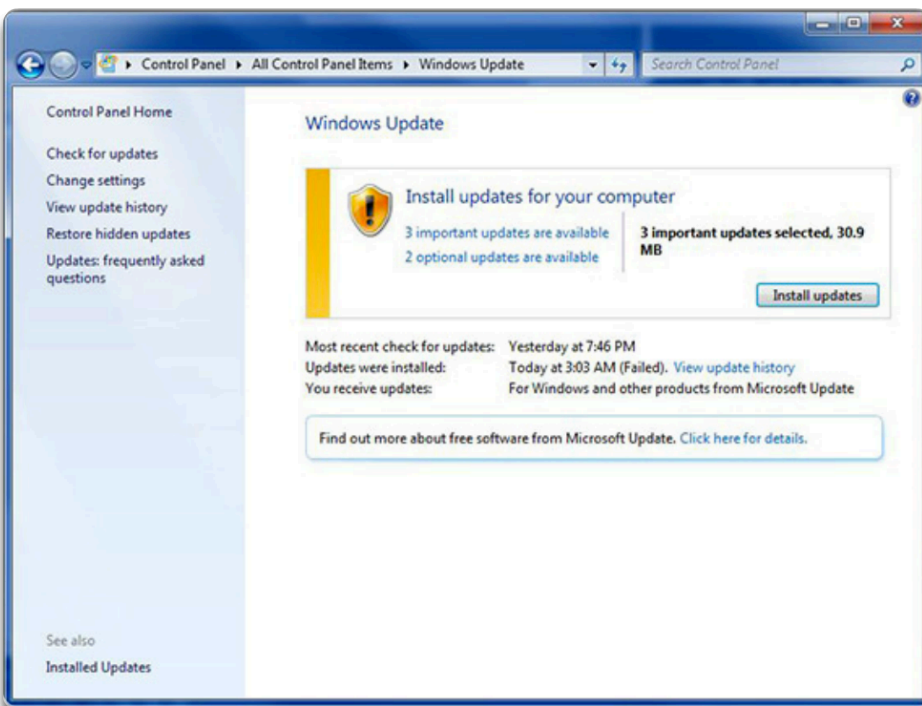
Scheduling Tasks

You can schedule preventive maintenance applications to run at an assigned time. You can schedule tasks using the GUI based Windows Task Scheduler or the CLI **at** command. Both these tools allow you to run a command once at a specific time or run an ongoing basis on selected days or times. For recurring tasks and deleting tasks already scheduled, the Windows Task Scheduler, shown in the figure, is easier to learn and use than the **at** command.

Windows Task Scheduler

You can automate tasks using the Task Scheduler. The Task Scheduler monitors selected, user-defined criteria and then executes the tasks when the criteria have been met. Some common tasks that are automated using Task Scheduler include:

- Disk cleanup

- Backup

- Disk defragmenter

- Restore point

- Starting other applications

To access the Windows Task Scheduler in Windows 7 and Windows Vista, use the following path:

Start > All Programs > Accessories > System Tools > Task Scheduler

In Windows XP, use the following path:

Start > All Programs > Accessories > System Tools > Scheduled Tasks

at Command

You can use the **at** command to schedule a command, script file, or application to run at a specific date and time. To use the **at** command, you must be logged in as Administrator.
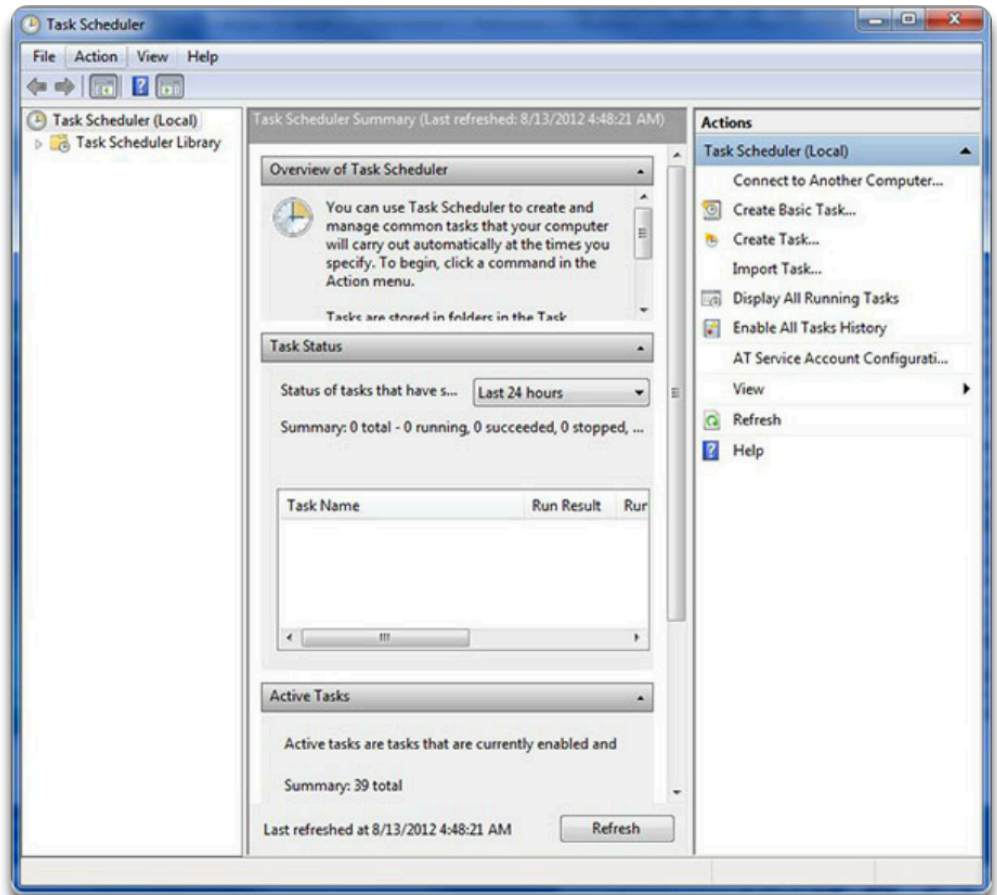
To access more information about the **at** command in Windows 7 and Windows Vista, use the following path:

Start > Start Search > type **cmd** and press **Enter >** type **at /?** in the command line and press **Enter**

To access information about the **at** command in Windows XP, use the following path:

Start > Run > type **cmd** and press **Enter >** type **at /?** in the command line and press **Enter**
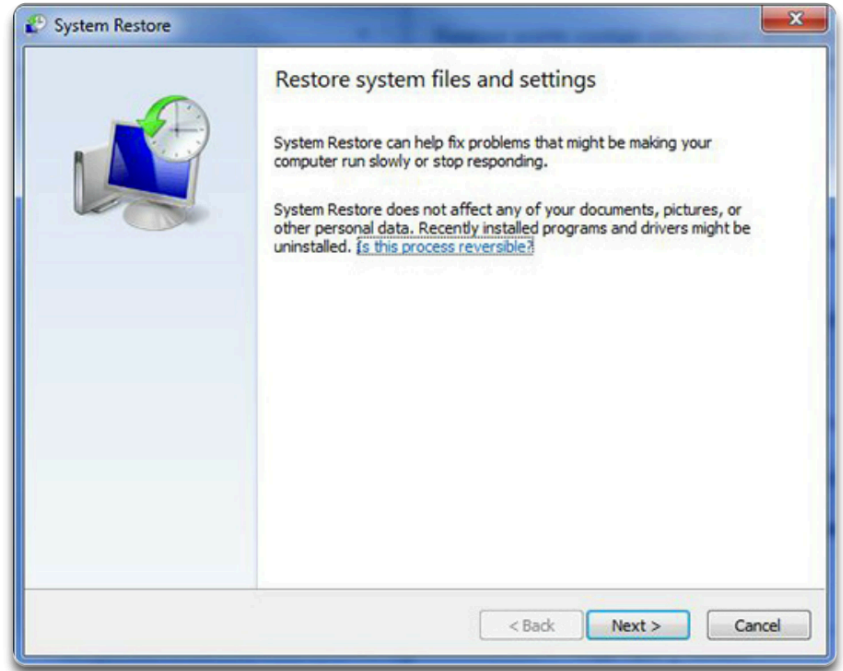
Restore Points

Sometimes installing an application or hardware driver can cause instability or create unexpected problems. Uninstalling the application or hardware driver usually corrects the problem. If uninstalling does not solve the problem, restore the computer to an earlier time when the system worked properly with the System Restore utility.

Restore points contain information about the system and registry settings. If a computer crashes or an update causes problems, the computer can be rolled back to a previous configuration using a restore point. System restore does not back up personal data files nor recover personal files that have been corrupted or deleted. Always use a dedicated backup system, such as a tape drive, optical disc, or USB storage device.

A technician should always create a restore point before making changes to a system in the following situations:

System Restore

- When updating the OS

- When installing or upgrading hardware

- When installing an application

- When installing a driver

To open the System Restore utility and create a restore point, use the following path:

Start > All Programs > Accessories > System Tools > System Restore

Hard Drive Backup

Backup Utility

It is important to establish a backup strategy that includes data recovery of personal files. You can use the Microsoft Backup Utility, shown in the figure, to perform backups as required. How the computer system is used, as well as organizational requirements, determines how often the data must be backed up and the type of backup to perform.

You can choose from several different types of backups depending on your requirements.

Normal Backup

A normal backup is also called a full backup. During a normal backup, all selected files on the disk are archived to the backup medium.

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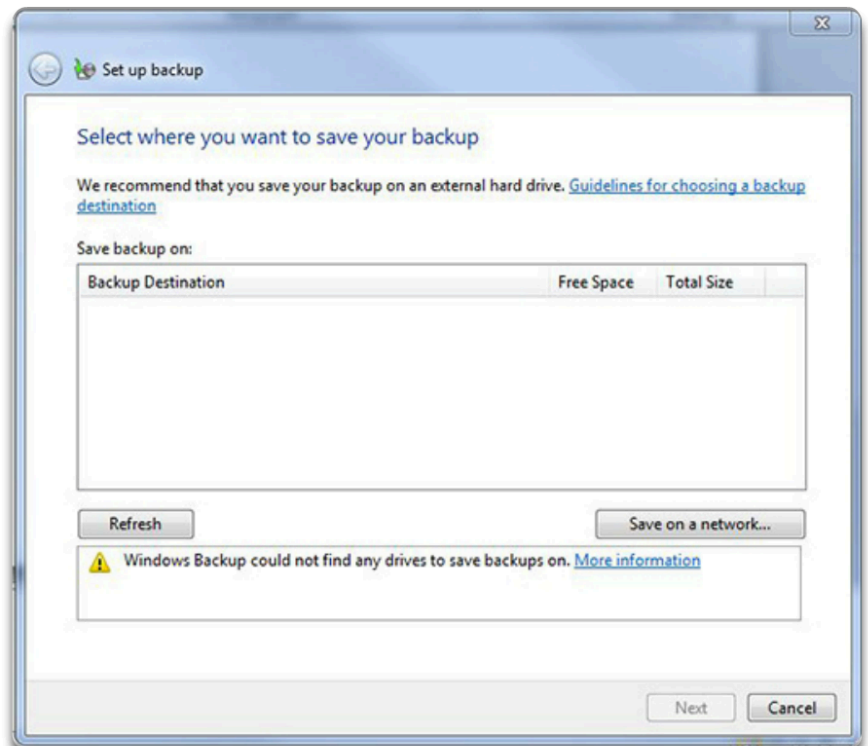
These files are marked as having been archived by clearing the archive bit.

Copy Backup

A copy backup copies all selected files. It does not mark the files as archived.

Incremental Backup

An incremental backup backs up all the files and folders that have been created or modified since either the last normal or incremental backup. It marks the files as archived by clearing the archive bit. This has the effect of advancing the starting point of differential backups without having to re-archive the entire contents of the drive. To recover an incremental backup, the last full backup must be recovered, followed by all incremental backups in order.

Differential Backup

A differential backup backs up all the files and folders that have been created or modified since either the last normal backup or the last incremental backup. A differential backup does not mark the files as archived. Copies are made from the same starting point until the next incremental or full backup is performed. Making differential backups is important because only the last full and differential backups are needed to restore all the data.