CONTINUOUS SOFTWARE AND HARDWARE SUPPORT

In this chapter you will find:

- How to make a correct diagnosis of a specific PC operation error.
- How to understand the information provided by the system about the available resources?
- How to identify the necessary actions to perform preventive technical support?
- How to verify that the software versions installed are the proper ones for the school's needs and yours?

At the end of this chapter you will be able to:

1] Have tools for a quick and effective troubleshooting.

2] Make a "medical history" of your PC, identifying potential risks, characteristics and methods to enhance its performance.

3] Give a good use to the PCs in your school, teaching users simple measures to carry out actions that enable the best performance of the devices.
INTRODUCTION TO THE CHAPTER

This chapter guides you through different topics that will help you prevent and solve possible problems by implementing permanent strategies. Certainly, at this point of the course you are able to identify some problematic cores which must be considered: for instance, the security issue is a critical topic for the comprehensive care of the school’s devices. Or you may be thinking about software, in order to optimize PC use, both by the students and the teachers. There are many issues that must be considered in order to become a powerful technical support team. Therefore, we must mention one more time the preventive and corrective measures to be implemented in order to keep and assure the good performance of the PCs. In addition, we must point out the value of the technical support role regarding the adoption of new technologies in the school, which generates multiple strategies that allow to enhance the best use of the resources.
CONCEPTUAL MAP OF THE CHAPTER
TOOLS TO ANTICIPATE HARDWARE PROBLEMS

Periodically check the condition of your PC

As you should know, when implementing a technical support plan, we should try to keep on top of errors that may occur. This means, considering the preventive tasks and implementing certain routines in order to assure the system is, in general, in a good condition.

There are some important tools that may help you perform this task, as they make it easy to **check** the condition of the **Operating System** and the **Hardware**. In this way, you can anticipate problems by knowing your PC’s condition in depth.

You must perform the corresponding controls in order to identify possible causes of a potential problem, establishing a proper diagnosis method.

The first step is to verify that the system resources behave properly. To do so, you must check that the following components and elements are working:

- Processor
- RAM Memory
- Hard Drive
- Network Connections

**By checking the behavior of the system resources you can control the causes for certain errors.**

**Did you know...?**

...that the capacity of the first compact disks (known by their acronym CD) was 74 minutes, the same amount of time as Beethoven’s 9th symphony...
How to verify if each one is working?

Follow these three first steps:

01 Type “Resource Monitor” in the Windows 7 Start menu and access the application.

02 In the General Information tab, you can see the behavior of all the system resources.

03 By clicking each of the tabs, you will see specific information for each type of resource.

Let's see what happens with each one...

CPU or Processor

On the top, you can see the processes running in the PC. In some cases, they are related to applications you are using, such as Microsoft Office Word 2010, while other processes are related to Services that start automatically or at a specific moment while using the PC.

Environmental Alert!

It is important to know that each process conducted in the PC consumes certain percentage of resources. The processor must not always be running at a high percentage. If this happened, the power consumption would be greater. In order to promote the rational use of energy we must consider that the optimal PC functioning should be within the lower levels of consumption.
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Memory

If you go to the next tab you can see the memory consumption of each and every process running in the PC. In addition, you will find a graphic that reflects its structure, allowing you to visually identify the percentage of memory free, in use, modified, reserved, or standby.

Drive

The Drive tab lets you understand “live” how the hard drive of your PC is being used. You will also see the drive activity, which is measured in KB/s and refers to the amount of files that the drive reads and writes.

Network

The last tab will allow you to see the activity and the processes related to your PC’s Network. From this same tab you will see the TCP connections that will be useful to check the PC condition as regards communication and transfer processes. Too many TCP connections may be the reason of slow connectivity. In that case, you must check if any malware is harming your PC, causing these problems.
What do the different parts and colors of the memory graphic mean?

Grey: it is the part reserved for the hardware.
Green: it is the percentage being used at that moment by the operating system, applications, and drivers.
Orange: the part of the memory that has been modified and must be saved in the hard drive to be used in another process.
Blue: the standby memory, waiting to be used when another application is opened.
Light blue: the free RAM memory, available for use.

Roll the mouse over each part of the graphic and you will find a brief explanation about them!
Cleanliness... don't be lazy!

It is essential to repeat over and over the cleanliness issue: many times this is a topic forgotten among the tasks planned by the technical support team, but it is a key issue. It is clear that very few users like to clean the different components of the PC and its environment, but we need not to be lazy and make some time to do this task. Because if there is dust in the PC, for example, the fans blowing air into the processor may not work properly, thus overheating the device and causing all the potential problems that may arise due to the situation. Dust makes the different devices behave in the wrong way. Therefore, we recommend to clean the PC periodically.

Pay attention to noises

Another issue to consider related to hardware is the noises made by the PC. If you realize that your PC is noisier than before, you must check what is happening. Loud and persistent noises are unusual and may be due to dust in the fan, causing the PC to function in the wrong way. Be careful and check your PC!
SOFTWARE RELATED ISSUES

The “medical history” of your PC

A very common problem among people who provide technical support is the ability to develop a “medical history” of the PC. This means to verify the software is properly installed and that it has been updated. It also allows to verify the potential existence of programs installed without the end user consent, i.e. detect the presence of malware in the PC. Windows 7 makes this task easy through the Reliability History.

To access it, you must type “reliability” in the Windows 7 Start menu and select the See Reliability History option. There, you can see a graphic similar to the one used by doctors to monitor the body functions, that will show you the history of your PC. You can select “see a daily or monthly classification,” and also a report of all the historic problems of the PC. This tool will show you all the information regarding Application Errors, Windows Errors, Miscellaneous Errors, Warnings and Information.

If you click a specific date you will see the different types of errors that occurred.
And you can get additional information of each of them. Also, depending on the type of error, the system offers to see technical details or search a solution over the Web.

For a clear visual interpretation of the information, on the left side of the frame of references there is a 1 to 10 scale (10 being the “ideal condition”). Every time the PC has a problem, that index decreases. Whereas, when the problem is solved, the index increases again until reaching 10.

In this way, you will have total control of what is going on in your PC.

Challenge yourself!

Test your ability to diagnose. Pay attention to the following hypothetical case: your class is working in the computing classroom and a classmate asks for your help because his/her PC is slow. What would you do to detect the problem?

Put the following steps in order:

- Check the resource monitor
- Review the reliability history
- Check the Windows Update status
- Access the activity center
- Perform a full scan of the PC
How to set up updates?
To do this, type “Windows Update” in the Windows 7 Start menu, once there, click on the Change Configuration option.

Another continuous support action is to verify the condition of several Operating System tools to make sure that the PC errors are not caused by the OS.

The first thing to do is to check the Windows Update configuration is the right one.

Remember that many of the common problems are solved with security settings and updates. That is why you must pay special attention to keep them updated, as the everyday use and the diversity of users that access the PCs can make it easier for viruses to access and cause errors in the programs.

Remember!
The antivirus must carry out a full scan periodically. This may be done manually or with an automatic setup.

UPDATES: A TOPIC TO CONSIDER

How to create graphics with Excel
The recommended option is **Install Updates Automatically**. But you can also select the **Download Updates** option, which allows you to choose which ones to install and the moment the update will begin. This is an important option as some **critical updates** require to **reboot** the PC. Although you can **reboot it later**, some updates only allow this in a limited way. In this way, being able to choose the moment to update may be useful to avoid rebooting the PCs when you are working or during class hours.

Another option is **Search for Updates**, that allows to select which updates will be downloaded and installed. This option will be useful when the **broadband is not quick enough** and you decide to give priority to the **critical updates** when downloading.

Finally, although it is not advisable, you also have the **Do not Search for Updates** option. This option disables Windows Update, so you have to remember to run it manually.
Another tool: User Account Control

Another important issue that the technical support team must consider is the User Account Control. This mechanism prevents malicious programs from taking control of your PC’s administrator credentials to perform any operation. In order to confirm that the user account control is properly setup you must type “Account Control” in the Windows 7 Start menu and select the Change User Account Control Configuration option.

Once in that screen you will be able to use the Default option.

In this way, you will be performing preventive support, this means, that you will forbid the rest of the users from making decisions regarding the performance of the PCs and the updates to be installed. The Microsoft Update option will extend the Operating System updates so Windows 7 can also find Hardware and other Software products, such as Microsoft Office 2010 or Microsoft Security Essentials.
You can also select **two other recommendations** that will inform you about your PC’s performance. The first one is related to a non-recommended action: the *“Never notify me”* option, as it will disable the feature and the **PC will be vulnerable to malicious software**. The second one points out the importance of using a **standard user** for **daily activities** and keeping the **Administrator User** for the time you need to make changes in the PCs. Remember that the excessive use of this user can make it easier for malicious software to access your credentials, with the potential security risks for devices and systems. To make this distinction, you must access the **management console**. To do so, **right click** on the **PC** icon on the desktop of the Start menu and select the **Management** option. Select the **Local Users and Groups** option. Then, choose the **Users** option to look at the **local users of the PC** list. Double click on the User you want to check and a **properties window will open**. There, you can configure actions like **block or disable account**.
You may be able to make changes related to the **password**, whether the **expiration date** or the **user's ability to change it**, as well as **your complete name and description**.

In the second tab called **Member** you will be able to see the **groups the user belongs to**. If the user belongs to the Administrator group you must check it using the mouse and then press the **Remove** button. In order to be standard user, it must only belong to the "Users" group.

Once you finish these steps, you must restart the session for the selected changes to take place.
Pay attention to the shared resources

In order to assure the good general performance of the PCs and the networks in particular, you must verify that the shared resources are properly set up.

To do so, right click on the Computer icon on the desktop and then select the Manage option. In the Shared Folders option, select Shared Resources. There you will be able to see that the PC has some resources shared by the system by default that end with the $ symbol. This means that they are automatically shared for administrative purposes.

If you want to share new resources, right click on shared resources and select the New Shared Resource option. A wizard will prompt you to follow a series of steps related to the path, name, description, and authorizations.

First, you must select the path of the folder or drive to Share by pressing the Browse button. When clicking Next, you must type the name of the shared resource and the description. Then, you can choose the authorizations. There, you will find different options:

- **allow access to all users in Read-only mode** and to the Administrators with full access, allow full access only to the administrators or customize authorizations. Once you determine this, by pressing Finish, the resource will be shared.

If you want to change the authorizations of one of the shared resources, double click on it to change the options.
Find the differences!

Pay attention to the Resource Monitor screenshot and point out the differences you find.
Have you checked the configuration of Internet Explorer?

The configuration of Internet Explorer 8.0 is another issue to consider in order to promote the good performance of the PCs. You must check that this is the right option. To do so, follow these steps:

01 Open the application
02 Select Options
03 Select Internet Options. There, you can check that the Internet Security Levels, Local Internet, Trustworthy and Restricted Sites are correct. We recommend to use the Mid-High mode and that the protected mode is enabled. Go to the Privacy tab to select the levels you deem appropriate.

Warning!

Internet Explorer 8 has a mode called No Add-ons that allows the end users to open the browser when they think access to a site is potentially dangerous for the PC. In these cases, it is convenient to use this mode that, although the toolbar and other applications added to the browser cannot be used, allows you to navigate safely. To enable this mode, you must type “Internet Explorer” in the Windows 7 Start menu and select the Internet Explorer (No Add-ons) option.
Problems with Internet Explorer?

Sometimes when you open Internet Explorer you may not be able to access certain websites or your connectivity may be very slow. This may have different reasons: here are some topics to consider when looking for the problem...

01 First, check the condition of your Internet connection: problems may be related to errors of a bad connectivity

02 Try to disable all the add-ons in order to know if any of them is causing the error. Go back to the textbox where we explain how to start Internet Explorer in No Add-ons mode.

03 Reset the Internet Explorer configuration. To do so, follow this path from the browser: Tools> Internet Options> Advanced Options> Reset

04 Finally, and as a general advice, verify you have the latest updates installed through Windows Update.

SUMMING UP...

Let’s review the path of permanent strategies for technical support...
There are some measures that the members of the team can periodically take in order to promote the PC’s good performance. These measures include issues related to software and hardware and the tools offered by Windows 7 make many of these tasks easy. By knowing this you will be able to train your abilities to efficiently identify the problems that may arise and empower yourself as a member of the technical support team. In addition, this practical knowledge will help you have more time to creatively deploy new technologies at school.
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Let's laugh at ourselves!

Green tip

As you have seen, Windows 7 incorporates certain tools that will help you to protect the Environment. If at school you use portable devices, you will find out that the power plans of Windows 7 offer options to promote energy saving, while optimizing the PC performance. The operating system offers the following options to efficiently manage the use of energy:

- Balanced: offers full performance when needed and saves power when the PC is inactive.

- Power Saver: reduces screen brightness and other system resources to save energy while allowing to get the most from the laptop battery.

- High Performance: uses a lot of energy because it maximizes screen brightness. In a laptop, reduces the amount of time a battery lasts.
SHARING EXPERIENCES
“Mate and technology at hand”

The School #72 is located in Villa Soriano, the oldest city of the Uruguay, surrounded by lush trees and full of children wearing white overalls. The arrival of new technologies was a real revolution, as it allowed a daily, fast communication with the rest of the world. A 7-year-old student called Antonella, who according to her teachers is a PC “expert”, commented: “With the PC we can learn a lot of things. Internet has plenty information for us.” In very little time, say the school teachers, students embraced technology and today it is very usual to enter the computing room and find them paying attention to the screen and doing their homeworks very concentrated. Both older and younger students were challenged to find new sources of knowledge and they got involved in the process of including new technologies in the learning and teaching process. Another girl, called Karina, describes how this process has been: “When I did my first homework in the PC, I was really excited... For us, it is not the same to have a PC than not to have one. I learned to type, insert images, and look for information... I never thought we were going to have PCs in this school.” A teacher called Estela, having the typical Uruguayan “mate” in her hand, gives us her point of view regarding this common challenge, with a slightly emotional tone: “The first time I started to research with the PC I didn’t know what to do. I was experimenting... it was complicated. It was very difficult because... I was really scared. Later, I took a course to learn about the hardware, software, the basic knowledge that would allow me to use the PC in a simple way. It was important to find out that I could learn.” These testimonies show that this is another case, this time in a rural school in Uruguay, where including technological advances has changed the students and the teachers view regarding their everyday school work.
Complete these exercises to improve your learning

A. Use the chapter’s conceptual map to prepare a checklist of the tasks you have already performed. It will also be used to control the ones pending.

B. Make a table to organize the continuous support tasks of the PC. Write the description of the task and its frequency.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean hardware devices</td>
<td>Check if components such as mouse, keyboard, etc., are clean.</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

C. Choose one of the continuous technical support tasks to be done and write down the steps needed to perform it. This type of card will be useful if there are new members in the technical support team.

Task to be done:

Step 1:

Step 2:

Step 3:

D. You are steps away from finishing the Technical Support for Schools course. What do you think you still need to learn? Make a list, share it with the rest of the team, and research those concepts.
Self-assessment
Check how much you know about continuous technical support

1. What is the Windows 7 tool that helps you check the condition of the different components of your PC?
   a. Device Manager
   b. Resource Monitor
   c. System Controller

2. Which device do you have to check to make a proper diagnosis?
   a. Processor and hard drive.
   b. Network connections and RAM memory
   c. Both are correct

3. What information can you find in the "Memory" tab in the Resource Monitor?
   a. Processes running in the PC
   b. The memory consumption of the different processes
   c. The system capacity

4. What is the meaning of the grey part of the memory graphic in the Resource Monitor?
   a. Free memory
   b. Memory used by the processes running
   c. Memory reserved for hardware

5. Which unit is used to measure the drive activity in relation with the file reading and writing processes?
   a. KB/s
   b. KB/m
   c. MB/s

6. What are the connections that allow to know the PC status regarding the network communication and transfer processes called?
   a. USB
   b. SERIAL-ATA
   c. TCP

7. What product is useful to clean the PCs in order to protect them from the dust?
   a. Fan
   b. Particles remover
   c. None of the above

8. What is the Windows 7 tool that allows you to see the "medical history" of your PC?
   a. System History
   b. Resource Manager
   c. Accounting History

9. Updates can only be manually searched and updated
   a. True
   b. False

10. What is the Internet Explorer 8 mode that allows you to safely navigate when you think a site is not trustworthy?
    a. Safe Mode
    b. No Add-ons
    c. Safe Boot Mode