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Fault User Guide

Technical User Guide

There are five main types of faults that can occur on any computer controlled system, those are:

# Loss of Service

A loss of service fault is maybe one of the more serious ones, this type of fault label is assigned to any fault that causes a service to go down completely. A simple example of this might be the main server that stores all the company data going down. This is a loss of service fault as it causes a loss of service to the company in the form of not being able to access mission critical data to do normal day to day task using the computer systems.

# Loss of Performance

A loss of performance fault is a label assigned to the type of fault that is a problem for the company however it’s not actually causing any services you have to stop functioning all together. This type of fault is normally assigned to problems that causes a system to slow down or causes a problem so that work isn’t as efficient as it could or should be.

# Virus

A virus is a fault that occurs when a malicious attacker infects your computer with software that’s sole purpose is to destroy, steal or just generally cause havoc on your machines. These types of attacks are very common however are also very easy to defend against.

# Error Message

An error message is a fault that occurs when something goes wrong however the operating system is smart enough to know what the problem was caused by. In these cases, an error message pops up displaying a code and some text to let them user know what has gone wrong. These are very useful when troubleshooting a problem as they normally lead directly to the fault and a fix.

# Other

All other faults are given the label “other” those these faults do also sometimes have names, they’re not the most common ones and thus are given the label “other”.

Typical Fault Fixing Method

All faults have different fixes, sometimes the fix is simple and you can do it within a minute while others can take hours or days to figure out. So when you are fixing faults you need to ensure that you are doing so in as efficient a way as possible. As such there is a very simple step by step process you can take to ensure that you find a fix for the fault as quickly as possible while also being incredibly thorough.

# Step 1 – Information

This is by far the most important step of all and should always be done as thorough as you possibly can. When you are given a fault you need to ensure that you gather as much information about the problem as you possibly can. This is because it simply makes your job as a Technician one hundred times easier, let me give you a simple example.

Jim, tells you that his computer will not turn on. Instantly you have the problem however there are possibly one thousand or more faults that could be causing it. So instead of just going with that bare minimum of information you would first ask Jim a series of questions. These questions should be simple to understand and should help exclude possibilities as-well as shed some light on the main fault as you go. For example you could ask about any noises such as beeps, any sounds from the HDD or fans. You could ask if the plug socket works and more.

# Step 2 – Identify the Fault

Now you have as much information as possible you would identify if the fault that the client has given you is indeed to fault that is occurring. Sometimes clients may not understand enough about computers to realise that there fault is actually something completely different to what they think it is and as such you need to first use all the gathered information to identify the true fault.

# Step 3 – Determine Possible Causes

Now you have the fault you need to determine all the possible causes for the fault. This is when you start to take advantage of all resources at your disposal. You will have had training already in the field so you have some base knowledge which you can use first. If you can’t figure it out though you have other resources: Google, Forums, Manufacturer books and websites, colleagues and so on. You should always ensure that you take advantage of all resources available to you as it makes your job a lot easier and also a lot faster.

# Step 4 – Research Plausible Fixes for all Causes.

Once you have identified the cause you need to identify the fix that will solve the client’s problem. This process is the exact same as determining the cause of the problem by using all resources available to you, however this time you are directly researching how to fix the issue rather than identifying the cause.

# Step 5 – Test

Finally you have to test to ensure the problem is fixed. This process normally consists of you getting the client to test the machine or you testing the machine to see if the fault occurs again.

Fault 1;

The education department has requested the replacement of a brand new HP colour laser jet 2605 printer. The printer is boxes and available from the support room. Your task is to fully install and test this in a suitable area guided by the department staff. It will be connected to a dedicated computer running Windows 7 Pro Operating System. On completion of the test you find there is a thick black line down the middle of the paper.

# Identification of problem;

The problem here is that the printer is printing an unwanted black line down all printed documents. This type of error would be classed as a loss of performance fault as the printer works however is simply malfunctioning. There is no service that is lost by direct cause of this error.

# Possible Causes;

The possible causes of this error are:

* Unclean Printer Headers. (Manufacturer website)
* Driver Malfunction. (Tom Hardware Forum)
* Software Malfunction. (Microsoft Help Forum)

# Fixes;

* **Unclean Printer Headers. (Manufacturer website)**

This fault may occur when the printer header has not been cleaned properly. To fix this fault I would simply run the dedicated software on the printer it-self to ensure the print header is clean. I would check if this worked by doing a test print using the printers test print functionality.

* **Driver Malfunction. (Tom Hardware Forum)**

This is a less common cause of the problem as many of the fixes I found where related the printer header fault however this one is also very easy to fix. I would simply go onto the manufacturer website and download the very latest driver for the printer. If no drivers where available then I would contact the manufacturer website for them.

* **Software Malfunction. (Microsoft Help Forum)**

This fault is caused when the software you are using to print malfunctions. The only real way to fix this fault would be to re-install the software. If the software continues to be this issue then you would have to obtain a different piece of software to do the printing. You could also find a patch to fix this issue.

# Chosen Fix;

* **Unclean Printer Headers. (Manufacturer website)**

# Fix Justification;

I used several different sources for the information regarding this fault however the best and most useful information is that which you can trust most. As such the manufacturer website ranks highest. Being the company that designed the printer, they’re going to know exactly how to fix any error that may arise when using the printer.

Fault 2;

You have been called out by the help desk to a problem with Mr Jacob Duval’s P.C who works in the finance dept. He reports that when he starts the computer, he receives the NTldr is missing error.

# Identification of problem;

The fault here is an error code one which is very handy to us. Using some lookup tools and reading we can find what NTldr means and use that information to fix the problem.

# Possible Causes;

The possible causes of this error are:

* Boot device is not configured correctly. (Microsoft Support)
* Boot drive data is corrupt. (YouTube)
* Jumper on boot hard drive not set correctly. (Book : Common Microsoft Faults)
* BIOS Update needed. (ntldrismissing.com)

# Fixes;

* **Boot device is not configured correctly. (Microsoft Support)**

To ensure your boot device is configured correctly you would have to go into the bios and make sure the bios system is seeing the hard drive as a boot drive and also make sure that the drives boot in the correct order, ensuring to place the boot drive first.

* **Boot drive data is corrupt. (YouTube)**

To fix this fault you would have to format the boot drive and reinstall a new clean OS from scratch.

* **Jumper on boot hard drive not set correctly. (Co-Worker)**

This fix can be accomplished by ensuring the jumper on the back of your hard drive is set into the correct position.

* **BIOS Update needed. (ntldrismissing.com)**

This is the most extreme fix and would be very hard to accomplish. To update the bios you would need to access the bios menu and using a USB device, flash a new bios to the BIOS chip.

# Chosen Fix;

* **Boot device is not configured correctly. (Microsoft Support)**

# Fix Justification;

This is a very common error that has been seen by millions, as such there are hundreds of people posting on forums and on Microsoft support forum all asking about the same error. Out of all the fixes that had worked for people, this fix ranked highest. As such this is the most likely culprit to be causing the fault. This information also comes directly from the website of the company that programmed this particular error catching system into the operating system.

Fault 3;

You have been called by the help desk to another computer problem for a member of staff who works in the social services dept. The P.C will not start and you automatically think that is a power supply problem.

# Identification of problem;

This fault is a loss of service as the computer will outright not turn on at all. This causes a loss of service as the computer is out of commission until it is fixed.

# Possible Causes;

The possible causes of this error are:

* Power Supply is dead. (Self-diagnostic)
* Socket Power is unstable. (Microsoft Forums)
* Fuse in plug is dead. (Toms Hardware)
* Wall socket does not work. (Co-worker)

# Fixes;

* **Power Supply is dead. (Self-diagnostic)**

This can be fixed by replacing the power supply with a newer one.

* **Socket Power is unstable. (Microsoft Forums)**

To check this you would need to employee an electrician to ensure the power from the outlet is clean and stable.

* **Fuse in plug is dead. (Toms Hardware)**

To fix this issue you can simply replace the fuse in the plug itself for the computer power supply.

* **Wall socket does not work. (Co-worker)**

To check if this is the problem you would do the light test. Get a lamp and plug it into the same socket that the P.C was plugged into. If the socket is indeed dead then you would need to employee an electrician to fix the sockets for you.

# Chosen Fix;

* **All of the above.**

# Fix Justification;

In this situation there is far too little information to make a definitive answer on what exactly the problem is. As such this is a perfect case for you to run a barrage of test and fault finding fixes to be able to solve the issue. All the above fixes should be tested as all of the above fixes could be the culprit. You would choose to do said fixes in a logical order, example;

Check the wall socket even works,   
Check the fuse is not blown in the plug,   
Check if Socket Power is unstable,   
and finally; check if power supply is dead.

Fault 4;

Mr Jack Smith works in social services and he has reported to the help desk that his P.C keeps shutting down. He has monitored the situation and finds that if he leaves his P.C off for a while it stays on for a longer period of time but then still shuts down.

# Identification of problem;

This fault is both a loss of service and loss of performance as member of staff can use the machine however it requires a restart all the time which then makes it a loss of service until the machine works again for a little while.

# Possible Causes;

The possible causes of this error are:

* Overheating. (Toms Hardware)
* Virus. (CNET)

# Fixes;

* **Overheating. (Toms Hardware)**

To fix this issue you first start out by cleaning out the P.C to make it free from any dust and debris. This ensures that the most amount of air possible is getting to the CPU cooler. If the problem persists then you may have to purchase and install another better CPU cooler.

* **Virus. (CNET)**

To fix this fault, a full system virus scan must be performed. If the system does not have an antivirus application then you would install one and run the antivirus check. Ensuring to remove and delete any effected files.

# Chosen Fix;

* **Overheating. (Toms Hardware)**

# Fix Justification;

The reason I believe overheating is the culprit here is because the client has said that the computer is operable for a period of time however then shuts down. The reason I think it is directly heat related though is the fact he mentions that the longer he leaves it, the longer it stays on. This would align perfectly with the fact that the computer components such as the CPU would have cooled off a great deal more when left for longer compared to just simply cycling the system. Tom’s hardware is a known and well trusted source in the tech community and there are more than ten cases of this issue on their forums which makes them an invaluable source in this case.

Fault 5;

Ms Tracey Moffat is experiencing some abnormal problem that seem to be intermittent. She first reports that her Windows 7 P.C keeps freezing and she is told to reboot the system, it works fine for a while but still freezes. She also has reported on another occasion that she keeps getting error that are flagged as “CRC” or “Cyclic Redundancy Error” and some of her files are missing, unreadable or corrupt. It also takes “forever” or is impossible to enter some files and folders.

# Identification of problem;

This problem is once again that of an error code fault. Since we have the error code and some text to go with the error code, we can use tools to find out what the problem is caused by.

# Possible Causes;

The possible causes of this error are:

* Virus. (Microsoft Support)
* Hard Drive data corrupt. (Microsoft Support)
* Hard Drive dying. (Linus Tech Group Forum)

# Fixes;

* **Virus. (Microsoft Support)**

To fix this fault, a full system virus scan must be performed. If the system does not have an antivirus application then you would install one and run the antivirus check. Ensuring to remove and delete any effected files.

* **Hard Drive data corrupt. (Microsoft Support)**

The only way to fix this fault is to restore either a backup or restore to an older restore point on the effected computer.

* **Hard Drive dying. (Linus Tech Group Forum)**

Fixing this error is as simple as removing the old hard drive and installing a new one. Ensuring to back up as much data as possible for the transfer onto the new hard drive.

# Chosen Fix;

* **Hard Drive data corrupt. (Microsoft Support)**

# Fix Justification;

According to the Microsoft support website, this error is often given when the system files you are trying to access have become corrupt and thus no longer readable. This can be a knock-on type effect with more and more corruptions being made because of the corruption before it. This is most likely the correct fault fix because it’s not all files that are inaccessible (only select ones) which indicates that the hard drive files are slowly becoming corrupt. The reason this source of information can be trusted is because Microsoft are the company that built and designed the error triggering system into the Windows operating system.

Fault 6;

Gavin Holmes reports that he keeps getting the error “Running out of virtual memory”. You find that this problem is familiar and you use a software tool to monitor the performance of Gavin’s P.C. Your results are the main memory is not the cause.

# Identification of problem;

This problem is once again that of an error code fault. Since we have the error code and some text to go with the error code, we can use tools to find out what the problem is caused by.

# Possible Causes;

The possible causes of this error are:

* Increase the paging file (virtual memory) size (Microsoft Support)
* Determine if a program overuses memory (Microsoft Support)

# Fixes;

**Increase the paging file (virtual memory) size:**

1. Open System by clicking the **Start** buttonPicture of the Start button, right-clicking **Computer**, and then clicking **Properties**.
2. In the left pane, click **advanced system settings**. Administrator permission required If you're prompted for an administrator password or confirmation, type the password or provide confirmation.
3. On the **Advanced** tab, under **Performance**, click **Settings**.
4. Click the **Advanced** tab, and then, under **Virtual memory**, click **Change**.
5. Clear the **automatically manage paging file size for all drives** check box.
6. Under **Drive [Volume Label]**, click the drive that contains the paging file you want to change.
7. Click **Custom size**, type a new size in megabytes in the **Initial size (MB)** or **Maximum size (MB)** box, click **Set**, and then click **OK**.

**Determine if a program overuses memory:**To determine which program is using the most memory, follow these steps:

1. Open Task Manager by right-clicking the taskbar, and then clicking **Start Task Manager**.
2. Click the **Processes** tab.
3. To sort programs by memory usage, click **Memory (Private Working Set)**.

# Chosen Fix;

**Increase the paging file (virtual memory) size (Microsoft Support)**

# Fix Justification;

This fix comes directly from the company that designs the whole operating system which makes it the mostly likely and reliable to work. This fix is also well documented as being the fix to the exact error that the client was receiving.

Value of Validity of all Resources

# Own Knowledge

As a tech support worker you are going to have had training and are going to have knowledge regarding basic and even complex faults that can occur and how to fix them, you may also have experience fixing problems and knowledge from that too. This kind of resource is incredibly invaluable as it’s often one of the most fastest and efficient to take advantage of. It requires no outside help and allows you to fix the problem as quickly as you possible can. The one downside however is memory isn’t always perfect and sometimes you may forget certain steps and cause more problems. This form of resource should only be used when you have the upmost confidence that you solution is the correct one for the fault you are dealing with.

# Manufacturer Websites

This is often seen as the most useful of all resource as its information and help provided to you directly from the manufacturer. This normally means that the information you gain from this resource is always correct and you may even be able to take advantage of manufacturer forums to ask them directly about your problem. The main downside to this form of resource though is that it’s often limited and you often find that people do not use the devices you are having a problem with in the exact way the manufacturer intended. There is also the problem that many manufacturers do not update their websites for long periods of time and only include a digital version of a manual (more below) for the device.

# Device or Component Manual

A manual is always very valuable when troubleshooting a fault because it can often shed light and give you further information about the device or component so you can find the fault and possibly fix it. The main downside to a manual though is that its content is often limited to tech specs and setup procedures. There are very few manuals that will include fixes for issues as manufacturers simply don’t see the need to put it in. Another problem is that the manual often gets lost which makes this resource completely useless at that point. This resource should always be used for further information when possible though.

# Colleagues

Colleagues are often a source of wisdom and knowledge that literally give you a second brain to fix a problem. The main problem though is that they aren’t always available and sometimes by pulling them to help you, you stop them doing their job. However if they are available and not busy then the knowledge they give you can be invaluable as colleagues could have fixed the very same problem you are having before and may know exactly how to fix it again for you.

# Forums

Forums or online boards that you can visit for information and knowledge about a specific problem can be very amazing. They can offer a great variety of minds to solve a problem and because it’s on the internet you can often find a fix or forum about even the most complicated fault. However that is where the good times stop, the one main problem above all other regarding forums are the fix validity. Often times you may come across a fix that is for your exact problem as it doesn’t work, you might ask, “well how can that be true?” well simply put, people on forums tend to leave a lot of the really important information out because they deem it not to be important such as the specs of the device they’d had the trouble with, the operating system they’re using and the components in their device. All these things are individual and each very important to the trouble shooting process and because of the lack of them online, you can never be too sure if a fix is going to work or not. There is also the problem of “anyone can post online”, this is a problem because it allows people to post fixes that don’t work which can even in some cases cause more damage. The only time you should really trust forums is when there are a lot of documented cases of the fix working and you should always ensure you back up and save all you can before attempting a fix found via a forum resource.