The IT Support Handbook

A How-To Guide to Providing Effective Help and Support to IT Users

Second Edition

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To err is human, but to really screw things up requires a computer.

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About the Author

Mike Halsey is a Microsoft MVP (Most Valuable Professional) awardee, since 2011, and technical expert. As the author of Windows troubleshooting books and training videos since Windows 7, he is well versed in the problems and issues faced by PC users, IT pros, and system administrators when administering and maintaining all aspects of a PC ecosystem. Mike spent many years as a teacher and used this experience to help explain complex subjects in simple and straightforward ways. Originally from the UK, Mike now lives a simpler and less complicated life in the South of France with his three border collies, Evan, Robbie, and Téo.

About the Technical Reviewer

Massimo Nardone is a seasoned cyber, information, and operational technology (OT) security professional with 28 years of experience working with IBM, HP, and Cognizant, among others, with IT, OT, IoT, and IIoT security roles and responsibilities, including CISO, BISO, IT/OT/IoT Security Architect, Security Assessor/Auditor, PCI QSA, and ICS/SCADA Expert.

He is the founder of Massimo Security Services, a company providing IT-OT-IoT Security Consulting Services, and member of ISACA, ISF, Nordic CISO Forum, and Android Global Forum and owns four international patents.

He is the coauthor of five Apress IT books**.**

Introduction

A few years ago Microsoft announced the future of computing. Windows 10X was supposed to be a completely virtualized OS, where every app, every driver, every component within the operating system itself would run in its own self-contained virtual machine. This would have made encountering problems with PCs extremely rare and would have almost completely eliminated the need for a reboot when installing an update. That went well.

To be fair, this type of technology is extremely difficult to implement and never happened because on lower-end hardware it ran very slowly. What does this mean? Well it means that one day, perhaps even in my lifetime, we will see this technology and *yours truly* will finally be allowed to retire. For now though, and for the foreseeable future, we plod along as normal and carry on supporting PCs.

But then the world changed, the world of work changed with it, and the world of IT Support changed around that, perhaps forever. This second edition then became very necessary as never between the first edition of one of my books and the second edition, or the edition for the next Windows version, has so much needed to be said and updated.

So here it is, the update, bringing this book and IT Support crashing into the present, and some of the future. We'll see what happens in the coming years and decades about completely virtualized operating systems, but for now, none of them support this technology, none of the hardware we use supports it, and things still break... regularly.

Have fun!

PART I

IT Support Fundamentals

An Introduction to IT Support

There's often an interesting story as to how people got started with a career in IT Support. In my case I was a tinkerer, I wanted to know what was inside the case and how things were made. This meant that whenever I had access to a computer, be it my own Sinclair ZX81, Spectrum or QL, or the Apple II or IBM PC that my father brought home from work, I would pull it apart to see what it was made of.

It's possible really that I could have been an engineer though I didn't have much of an understanding of semiconductors or electrical resistance. Studying electronics for a while when I was 16 didn't really help either as I was far more interested in programming and the user experience.

Inevitably, however, this led me to build an aptitude with computers which my parents spotted early on and encouraged. From the age of 11, I was never very far from a computer, even having one as my constant travel companion for most of my late teens and right through my 20s in the form of the Psion Organisers, and Series 3 and Series 5 PDAs. Today I own a broad series of computers from phones with a physical keyboard (not Blackberry but the spiritual successors to the Psion PDAs) and various PCs, including a desktop with an ARM processor. There hasn't been a single day since my 11th birthday when I haven't had a computer available to me in one form or another; that's more than 40 years.

When you have such constant and close experience using computers on a day-to-day basis, it's easy to build a relationship with them where you understand how they function, what makes them operate in different ways, and what's hidden away beneath the surface.

This of course is where the story gets interesting, and perhaps a little funny. I still tinkered in my 20s, only now I was tinkering with software and operating systems, playing with .ini files in early versions of Windows, or boot partitions and registry entries.

It wasn't long before I would regularly begin to break my PC. This wasn't a problem at the time as I wasn't using it for work, or anything critical, and had the time to teach myself how to diagnose what I'd done, and ultimately how to fix things.

When I discovered a tweak or a hack that was particularly cool though, I wanted to share it, and so would implement it on the computers of my friends and family; they needed me to provide tech support and, because they didn't understand the mechanics of what I was doing, rarely questioned my actions.

You can probably tell where this led, and pretty soon I was not just breaking my own computer, but theirs as well. This was slightly more of a problem as they'd be annoyed. I would have to fix things, quickly, efficiently, and effectively, and it's amazing how quickly you can learn how to repair problems when somebody's breathing down your neck waiting to get access to their email again.

It was at that point that I began to do IT Support for a living, first independently helping individuals with PC problems in their homes, and then for Fujitsu Siemens working in second-line support in a call center. It was my time providing support for major banks, supermarkets, research firms, and retail giants that taught me just how some people could mistreat their PCs, hardware and software, and cause endless problems.

One particular story that always raises a laugh with me is a colleague who took a call from a manager who had decided that his keyboard was dirty and needed cleaning. He'd filled his basin with hot, soapy water and given the keys a good scrub. Recognizing though that it was electrical equipment, he'd hung it upside down overnight to give it time to dry.

The following day his computer wouldn't work, so he called the IT helpdesk and explained what he'd done. On checking the asset tag information the manager had provided, my colleague had to inform him that the reason his computer wouldn't work was because the keyboard he'd washed was built into the rest of his laptop.

My colleague was, as you would expect, a consummate professional, and only laughed his head off and told the rest of us what had happened, after he'd arranged for the laptop to be replaced (there wasn't a lot of point in servicing it), ended the call, and written up his notes.

There are definite protocols to follow when providing IT Support, and openly laughing at the customer rarely sets the right tone, no matter how funny or idiotic the situation they found themselves in might be. We've all heard the story of the person who couldn't get their computer to work, but who couldn't see around the back of the unit to

check the power and monitor cables as the lights were off because of a power cut. We've also all heard the story of the server technician who was complaining his keyboard had packed up, only to eventually find another keyboard sitting underneath it that worked perfectly.

One of my favorite stories doesn't involve IT Support at all, but rather a PC retail outlet, a large chain, which a friend was visiting one sleepy Sunday with his father. He called me to say that the sales guy was following them around the shop floor and asked what he should do. On that occasion I have to admit I did laugh.

The Fundamentals of IT Support

There are many roles in which you might find yourself providing IT Support, from first-, second-, or third-line technical support, on-site or traveling engineer, systems administrator or the manager of a team of administrators, the owner of a small store or business that repairs PCs for customers, or someone with an aptitude for computers who repairs problems for friends and family.

A few short years ago, something happened which has had a significant impact for those of us that provide IT and technical support, and I don't think I need to remind you what it is. The global events of 2020 and 2021 changed *everything*, and probably forever. In fairness, there had been pressure on businesses to allow more remote and home working for years before the pandemic, but businesses, and especially major corporations, move slowly, and don't make decisions easily.

This meant that these businesses would always push back against the employees that wanted to spend more time working outside of the office, commonly with the threat that there were plenty of other people that could do their job if they didn't like it. The pandemic though came at a time of massively high employment and shortages of people that *could* do the job.

This all resulted in a major shift in the employee–employer relationship where all of a sudden, employees were not only demanding remote work, and getting it, but sometimes even taking their employers to court if they didn't comply. Apple was a good example of this, where a large group of employees signed a petition against CEO Tim Cook's request they return to the office just three days a week.

All of this affects and changes how we provide support, as it's no longer clear what computer people are using for work purposes, if it's their own home computer, a computer shared with their children or family for gaming or school, and even if it's a PC at all, or instead an iPad with an attached keyboard and a remote connection to the company's cloud services.

One of the challenges with this is that the term computer has become so ubiquitous that any computing device, be it a desktop, laptop, tablet, thin-client, and whichever operating system and software it might be running is called a computer, because no matter all the differences, they all access the same services and all operate in broadly the same way.

So how does this impact on the support we all provide? Well it still begins with the same basics that it always has. All IT Support stems from three fundamental questions. What, when, and how? What is it that's changed or that happened just before the problem began? When did the problem begin? How did the problem begin?

This last question is actually the most important as the core desire of anybody providing IT Support is to reduce their own workload, and stop other people being from a numpty.[1] If you can configure their computer in a way as to prevent that problem from recurring, or help the user understand what they did so as to ensure they don't do it again, then that's less time you'll spend slapping your hand against your face, and more time you can devote to playing your favorite mobile or PC game. So let's look in more detail at these three questions, as they're going to be something I'll mention a lot.

What?

The question "What?" is the most basic principle of IT Support and it's utterly impossible to provide any kind of support without it being asked. It's slightly more complex, however, than "What the hell have you done now?" or "What could possibly have convinced you that was a good idea?"

I always start with the question "What's changed?" as nothing ever goes wrong with computers unless something has changed. They always work out of the box which is why it's often said that a computer that's left inside the box, and never used, will never develop a problem. If you can understand what it is that's changed, or that has happened recently then you can often get to the root of the problem very quickly.

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[1] Numpty [ˈnəm(p)tē]: *Noun* (British informal), a stupid or ineffectual person who has little idea what they're doing or talking about.

Let's look at some scenarios, because as you might have already guessed by now, I'm quite fond of those. In scenario A, a person is complaining they can no longer print to their printer. On asking the question what's changed, it transpires that the printer developed a fault and was swapped for a new one a couple of days before. Externally, and to the untrained and, let's face it uninterested eye of the office worker the new printer is completely identical to the old one, except that the new printer has an added "S" on the end of the model number, a tiny change that can have all sorts of ramifications for drivers, default printer setup, and tray selections.

In scenario B, a worker cannot get access to cloud storage so they can open documents they need for a project. On asking the question "What's changed?" you might discover that all the PCs in the office installed some Windows Updates the evening before as people left for the day, and that three of this individual's colleagues have retired to the kitchen for a cup of tea as they can't access the remote files either.

Lastly, in scenario C, a remote worker can't get access to the company network to upload their sales data, but hasn't contacted their workplace directly as this is what IT Support is for. A quick call to the workplace, or a look online at the ISP's (Internet Service Provider) website reveals that somebody in a digger has accidentally severed the main broadband fiber connection while working on the construction site up the road.

If you understand what it is that has changed, you can narrow down the number of possible causes for the problem. This is what I like to call the Sherlock Holmes method, and indeed the "world's greatest detective" probably would have been very good at IT Support.

Sherlock Holmes, or rather the author Sir Arthur Conan Doyle, stated that "Once you eliminate the impossible, whatever remains, no matter how improbable, must be the truth." Turning IT Support into a process of elimination is essential, as there's just so many things that can go wrong; we'll look at these in more detail later in this chapter.

When?

In order to understand what a problem is, and the possible knock-on effects and ramifications it can have, you need to know when it began. It might be that the problem occurred as people arrived for work that morning, as in the preceding scenario B. Alternatively, it could be that the problem has existed, on and off, for several weeks. Julie first encountered it in accounts, and Dave in logistics had it too a few days later. It's been on the caller's PC now for some time, but because they don't use the app/feature/hardware on which there is a problem they've not thought too much about it until now.

Tracing problems back that began some time ago can sometimes be difficult and problematic, but this is where you can use features on PCs such as the Event Viewer and Reliability Monitor, both of which we'll look at in Chapter 16 *Harnessing the System and Error Reporting in Windows*. You might discover, however, that the problem occurred just after all the desks were moved after the annual spring clean, or around the same time as a massive thunderstorm. All of this is useful information that helps you narrow down the possible causes.

How?

This leads us onto "How?" the problem occurred, but even this is more complex than it might at first appear. The problem occurred when I turned off my PC. Okay, but how did you turn it off? Did you use shut down from the Start Menu, press and hold the power button for four seconds, or just switch it off at the mains socket?

In another example, someone might have a problem with a tablet that happened because a software update was installed. In fact, on this occasion, it could be pure coincidence that the software update occurred around the same time as the problem began, and the actual cause of the problem is a change to security policies requiring a certificate import on their device they didn't read the email for because they've just returned from vacation.

People don't want to know technical things, they see computers as consumer electronics devices in much the same way they view their TV or microwave. This isn't helped by the fact that their TV might occasionally get a software update, or the PC is a tablet with an embedded OS (operating system) and apps that just come from a store.

This means that asking the question "How?" might just return a puzzled look and the response "You're the IT person, you tell me." On these occasions, asking how probably won't get you very far, but you can usually ascertain the information you need from having asked what the problem is and what has changed.

Never Make Assumptions

Patience is a virtue, in IT… doubly so. Okay, that's not actually a quote but it's a good rule of thumb. You should never make assumptions about people, circumstances, hardware, software and apps, or problems, as in doing so you'll be limiting your diagnostic abilities and you're very likely to come to incorrect conclusions, at least some of the time.

You can't assume a cloud service might have an outage when it transpires the user has connected their laptop to the wrong Wi-Fi network. You also can't assume a printer driver is misconfigured and needs reinstalling when it turns out the user is actually visiting a different office on that day. Nor can you assume the user simply doesn't know what it is they're doing, when it really transpires a new version of the software they're using has just been deployed, and half the features they use every day have moved or changed in some way.

Neither can you make assumptions about what people know about computers and technology. Not everybody is as technically literate as you are, it's why you have a job after all, not everybody has used the same technology and software you use as a matter of course, and not everybody knows the difference between a USB port and an SD Card reader. This of course brings us neatly on to…

The Language Barrier

I'm pretty sure you've all heard the stories of someone pointing at their monitor and referring to it as the PC, or have even encountered this yourself, when in fact the PC is a large black box that sits under their desk. You might also have encountered someone holding up their Surface Pro and referring to as an iPad, or as in the case of my own household just two days before I wrote the first edition of this book, turning the mesh router system off and on again to fix an Internet connection problem, when it was actually a separate modem that connected the house to the world wide web.

It's common for non-technical people to say that "The Internet isn't working" when in fact they mean it's one website they're having trouble with, and only because they've forgotten their password, or left their phone at home and now the two-factor authentication doesn't work.

Language is hugely important here in helping ascertain what it is that has happened. You might be perfectly familiar with terms such as UEFI, store app, 256-bit AES, USB-C, or Developer mode, but the average person is likely to look at you funny if you start referring to these things over dinner.

We also live in an increasingly small world, where people from one country work and live in many others, where traveling across the planet for work is increasingly common, and where conference calls between workplaces in different time-zones is just a perfectly normal Friday afternoon.

Cultural and language differences can have a huge impact on identifying what the cause of a problem is. Somebody for whom their native language is the only one they speak is unlikely to be able to describe the paper coming out of the printer with nasty black lines across it, and somebody in a country where use of your language is different (such as the way people in countries like India and Pakistan use English) can mean it's sometimes difficult to ascertain the exact meaning in what people say.

The Challenges of Local and Remote Support

IT Support can be delivered in several different ways, but it's not correct to think that providing support on-site, or having the computer brought to you will make the job any easier, in fact, providing local support can make things more difficult in some ways. Let me explain…

Owning or Working in an IT Support Shop

In these days of Internet shopping, it's becoming increasingly rare for independent computer shops to operate in our towns and cities, but they do still exist, and many of the big-name technology retail chains provide in-house support and repair.

Providing support in a large store, or a small, independent shop, or providing IT Support to people in their own homes as I used to do when I started in the business, can provide more flexibility and time for getting the job done. In fact I used to joke with people that I really enjoyed seeing used an old Windows 98 or XP system, running on low-end hardware, because I got paid by the hour.

If you have ever worked in, or had to take a PC to one of the big retail giants, however, for repair, you will know that there is a tremendous amount of pressure placed on staff to get repair jobs done quickly. This can all too often result in Windows being completely reinstalled from scratch, wiping the customer's settings, apps, and sometimes even some files or the browser history (not always a bad thing though this one). Alternatively, it can result in new hardware being fitted when it's not really required, or additional software, or a new Windows license being sold when it's not actually needed.

None of this means that the people providing support are inept, or trying to rip you off in some way; it's much more common that they're simply short on time and need to get through as many repair and support jobs in a day as they can.