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Learning Diary

– ICT-Specialist at Onitio

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Learning Diary

- ICT-Specialist at Onitio

The goal of this thesis was to document the authors experiences working as an IT Specialist at Onitio and use this documentation as a database of resolving issues that occurred during a monitoring period of 7 weeks in case they re-appeared in the future under different circumstances.

This type of documentation was heavily needed as most of the knowledge inside the team was not written down and was passed down from previous employees through word of mouth, which is not an efficient method nor a reliable one as constantly having to remember issues about certain programs and equipment is inefficient, counterproductive and resource intensive.

This thesis inspired the team at the company to start documenting the work more often in a similar fashion to create a data bank of solutions to problems with keywords. The databank is also useful for tracking how often similar issues happen, which helps the team identify the more problematic issues that need structured solutions.

Keywords:

Computer and information sciences, IT support, learning diary

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Oppimispäiväkirja

-IT-asiantuntijan työ Onitiolla

Tämän opinnäytetyön tavoitteena oli dokumentoida IT-asiantuntijan kokemukset työskentelystä Onitiolla. Oppimispäiväkirjan tavoitteena oli myös saada käsitys siitä, miten pystyy ratkaisemaan päivittäisiä työssä esiintyviä ongelmia. Näitä ongelmia tuli vastaan dokumentointiviikkojen aikana, ja ne kirjattiin siltä varalta, jos ne ilmenisivät uudelleen tulevaisuudessa eri olosuhteissa.

Dokumentoinnin parantamista tarvittiin kipeästi, sillä suurinta osaa tiimin sisäisestä tiedosta ei oltu kirjattu ylös. Tieto siirtyi työntekijöiden välillä suullisesti, mikä ei ole tehokas eikä luotettava menetelmä, sillä tiettyjen ohjelmien ja laitteiden asennustietojen jatkuva muistaminen on uuvuttavaa.

Tämä opinnäytetyö innoitti tiimiä dokumentoimaan päivittäistä työtä, jotta tulevaisuudessa muistioista voitaisiin luoda avainsanoihin perustuva tietopankki. Tietopankista olisi myös hyötyä ongelmatapausten määrän seuraamisessa, joka auttaa koordinaattoreita tunnistamaan toistuvat ongelmat, jotka tarvitsevat jäsenneltyjä ratkaisuja. Tietopankin tarkoituksena olisi myös helpottaa uusien työntekijöiden perehdyttämistä ja kouluttamista työtehtäviin.

Asiasanat:

Tietoviestintä tieteet, IT-tuki, oppimispäiväkirja

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List of abbreviations (or) symbols

Active Directory	Active Directory (AD) is a directory service developed by Microsoft for its Windows operating system. It is used as a domain controller in Windows environment providing authentication and authorization to the devices (Microsoft Windows Active Directory, 17.08.2022.).
Active pen	Active pen is an electronic input device that allows users to write directly onto the display of a device with a touchscreen.
AutoCAD	AutoCAD is a 2D and 3D computer-aided design (CAD) software developed by Autodesk. AutoCAD is a general drafting and design application used in industry by architects, engineers, graphic designers and other professionals (Autodesk AutoCAD, n.d.)
Advanced Driver Restore	Advanced Driver Restore (ADR) is a Dell Command Update function that restores the base drivers to the computer setup by the manufacturer. (DELL Command Manual Advanced driver restore, n.d.)
BitLocker	BitLocker is a full volume encryption feature included with Microsoft's Windows operating system. It protects data by providing encryption for hard drive volumes (Microsoft Windows BitLocker, n.d.)
BIOS	Basic Input/Output System is a firmware used to provide runtime services for operating systems and programs. It also helps with hardware initialization when the computer is turned on.

CATIA	CATIA is a multi-platform software suite for computer aided design, manufacturing and engineering. It is developed by Dassault Systèmes. It is used in multiple different fields of industry including but not limited to aerospace, automotive and packaging design (CATIA, n.d.)
DMA	Direct memory access (DMA) is a computer system feature that allows hardware subsystems to access main system memory independently of the central processing unit. This generally allows data to be transferred at a much faster rate as it does not require computing power from the processor.
DisplayPort	DisplayPort is a proprietary digital display interface. It is standardized and its primary use is to connect a video source to a display device.
Driver	A driver is a set of files that tells a piece of hardware how to function by communicating with a computer's OS. (Operating System)
Ethernet	Ethernet is the technology for connecting devices in a wired local area network (LAN) or wide area network (WAN). It enables devices to communicate with each other.
Excel	Excel is a spreadsheet editor software developed by Microsoft for a variety of operating systems. It features calculation capabilities, graphing tools and pivot tables (Microsoft Excel, n.d.)
Excel Add-In	Excel supports a variety of different add-ins which allows its users to extend the applications functionality

	across the board. They can be created by Microsoft themselves or 3rd party programmers.
Group Policy	Group Policy is a Microsoft's Windows operating system feature that allows administrators to control the working environment of user accounts and computer accounts in a domain. (Microsoft Windows Group Policy, 2016.)
GPU	GPU (Graphics processing unit) is a specialized electronic circuit initially designed for digital image processing. They can be separate video cards or embedded directly into motherboards.
HDMI	HDMI (High-Definition Multimedia Interface) is a proprietary audio and video interface for transmitting data between devices such as a display controller and a computer monitor.
IP address	IP address (Internet Protocol address) is a numerical label that is a assigned to a device connected to a network. It is required for communication between devices using the internet protocol.
Memory test	A memory test is a way to gauge the usability and functionality of memory inside a computer. (Memtest86 Memory Testing Philosophy, n.d.)
Microsoft Dynamics AX	Microsoft Dynamics AX is an enterprise resource planning (ERP) application developed by Microsoft (Microsoft Dynamics AX, 2021.)
NTFS	NTFS (New Technology File System) is a file system developed by Microsoft. Compared to its predecessors it is more secure, scalable and adds several features

	including the ability to backup the system while it is in use. (Microsoft NTFS overview, 24.03.2023.)
NVIDIA	NVIDIA or Nvidia corporation is an American multinational company which develops multiple different graphics processing units and application programming interfaces used in high-performance computing.
PDM	Version control and a way to share data with SolidWorks products. (SolidWorks PDM, n.d.)
Power cycling	The act of turning an electronic device off and then on again.
Program Files	Program Files is the directory name of a standard folder in Microsoft Windows in which applications that do not come out of the box with the operating system are installed in.
SolidWorks	SolidWorks is a brand within Dassault Systèmes that develops 3D CAD (Computer-aided design) design software and applications. SolidWorks consists of multiple different programs that each have their own use in 3D CAD modelling (SolidWorks, n.d.)
Thunderbolt	Thunderbolt is the brand name of a hardware interface for the connection of external peripherals to a computer, developed by Intel. One of its notable features is the ability to combine both PCI Express connections and DisplayPort connections along with supplying power (Intel Thunderbolt, n.d.)

USB	USB (Universal Serial Bus) is an industry standard that allows data exhange and delivery of power between many types of electronics.
USB-C	USB-C is a 24-pin connector that can carry audio, video and other data, to connect monitors or external drives. It can also be used to transmit power between devices and is used by multiple protocols such as USB, Thunderbolt, PCIe and HDMI.
VR	Virtual reality (VR) is a simulated experience that employs 3D near-eye displays and pose tracking to give the user an immersive feel of a virtual world.
WLAN	A wireless LAN (WLAN) is a wireless computer network that links two or more devices using wireless communication to form a local area network (LAN) within a limited area such as a factory, home or office.
Windows	Operating system developed by Microsoft (Microsoft Windows, n.d.)

1 Introduction

The goal of this thesis was to document author's experiences working as an IT Specialist at Onitio and use this documentation as a database of resolving issues that occurred during a monitoring period of 7 weeks in case they re-appeared in the future under different circumstances.

The goal of the diary was to also test the importance of internal communication and documentation in the form of a diary to make the IT teams' problem-solving capabilities more effective. The diary also acts as a means of observing the different development projects the team might be having in the future and how they turn out.

2 Summary of the current situation

2.1 Introduction of Onitio

Onitio is a recently established IT group, which is the result of a merger between InfoCare Group and the former Visma companies. Onitio is one of the biggest IT-Service providers in the Nordic countries providing on-site support to over 180 locations in Denmark, Finland, Norway, and Sweden. Curently, Onitio has over 1500 employees across all the Nordics and had a turnover of close to NOK 2 billion in 2023. (Onitio n.d. a.)

As an example, Onitio is currently providing on-site support services to companies such as the Kesko Group, HUS, Danske Bank and Finnair and has undertaken massive projects such as installing digital marketing systems to all Kesko Group owned grocery stores across Finland. After the project was completed, Onitio was also contracted to provide maintenance and service to these systems (Onitio n.d. b.).

2.2 Assignments

The author started working at Onitio around one year before starting the learning diary. Thus, there has been plenty of time to become accustomed to the methods and processes of the company and eventually the on-site IT support team. The daily tasks usually revolve around diagnosing broken devices, replacing them, and repairing them if possible. In addition, deliveries of new hardware are also done daily.

The information technology field is ever changing. A great part of author´s job is to stay on top of the game by researching and experimenting with the latest updates, software, and hardware so that the customers can have a functional IT-environment that runs as efficiently as possible.

Most of the day is spent receiving and answering reports about malfunctioning devices and other IT-related problems that the customers can report to the on-site team through the helpdesk. Most of the author's work revolves around hardware such as laptops and personal computers, printers, scanners, and meeting room devices but the team also provide troubleshooting and installation services for programs such as SolidWorks, CATIA, AutoCAD, and other programs the customer wants installed which can be anything from VR related software to business administration software.

2.3 Work week

Author´s usual work is from Monday to Friday around seven and a half hours each day. The day starts by checking the ticket queue to determine what kind of issues or deliveries have been reported. Then we as a team contact and plan with the users that made the tickets on how to proceed. This usually involves a lot of back-and-forth calls and email exchanges. Then we visit the users and pick up the devices, repair them or deliver new ones depending on what we agreed on. If the problem can be solved remotely or if it is a software installation, we can also use remote tools to access the devices although this is usually handled by a different team.

We also must prepare the devices that the manufacturer provides us with so that the users can use them for their work. The process starts by installing a custom image of Windows on the devices after which we install the required software that the customer had requested and all the driver updates that are necessary for it to function properly. The same process applies to printers and scanners although in much simpler terms where we just deliver and install the device on-site.

3 Learning diary

3.1 Week one

19.02.2024

We received a report that a user's laptop was not turning on. Usually, this issue is resolved by resetting the battery through a little hole at the bottom or by physically removing it and then power cycling the device before putting the battery back in. This allows the battery to recalibrate and work again in the laptop. The issue is often caused by letting the battery drain completely, usually by accident over the weekend.

This time however, the computer did not turn on after the procedure and the issue remained. Thus, we opened the laptop to look at the battery more closely. We immediately noticed there was no light coming from it, which indicates it is either poorly connected or not receiving charge for some other hardware related reason. We had to do further troubleshooting to pinpoint the exact issue and then proceed accordingly.

We tested the computer with a spare battery that we knew was working. This was done to check if the issue was motherboard related or battery related. The computer started working once the battery was switched with a working one, which means that the old battery, that did not work and was indeed faulty.

20.02.2024

Multiple cases have appeared recently about user monitors not functioning properly. We have known about this issue for a while now as we are aware about the docking stations poor functionality and since that has also started to bother users, now we are able to launch an investigation with the manufacturer to find out what is wrong with the dock.

First the computers BIOS, docking station firmware and USB-C drivers were tested. Updating these three things seemed to resolve it half the time but the other half was still a mystery. Our next suspect is the NVIDIA driver installed in the computers as the docking stations work fine other than the monitors which are directly associated with the laptops' GPU.

We suggest the team responsible for updating and maintaining these important drivers should do some testing and look at if that resolves the issue for the other half. The device manufacturer also agreed with the sentiment to take it as our next logical step in solving the issue.

21.02.2024

Today we tried updating the NVIDIA driver of one of the affected machines to see if it fixed the issue. This proved difficult, as we cannot install the latest driver since they need to be certified by Dassault before they can be used. This is because 3D modelling software needs specific drivers to work properly. The computer in question already had the latest one installed so we tried to roll back to the previous version to see if it fixed the issue.

We will have to wait and see until tomorrow to confirm if the device is functioning properly but for now the monitors seem to function properly.

Today during our routine computer deliveries, we stumbled upon a computer that did not charge properly because the cable felt flimsy and would not be recognized by the computer. We proceeded to check if there was dust inside the USB-C connector ports on the side of the laptop and cleaned it properly in case the issue lied there. This did not solve it, so we decided to check for all updates -- that were in our server -- in hopes that it would help and make the devices function properly. First, we had to update the computer's BIOS since it did not recognize the docking station. After the BIOS update went through, we were able to update the docking station as it was now recognized by the system. This seems to have resolved the issue.

22.02.2024

We received an update regarding the NVIDIA driver we had tested and installed on the device. It seems to have fixed the issue with the monitor's and everything is working fine but we are not permitted to use the version we have installed, as it does not work with certain software. We are going to have to figure out another fix or talk to a customer about updates to the software so that it functions properly with different drivers.

Today we also received a complaint about a laptop that was making too much noise and overheating, making it annoying for the customer to use. We had previously run tests on these laptops to see how we can optimize its performance to strike a balance between power and convenience. Disabling the "Intel Boost"-BIOS setting would decrease the temperature of the device by 10ºC while only dropping its performance by around 10% (Intel Boost, n.d.).

We applied the BIOS setting as the customer was using software that did not benefit from the added 10% in efficiency, and it made the computer's fan calm down and the computer in general became cooler and more manageable for them.

23.02.2024

Today we ran into an issue regarding BitLocker, which is a drive encryption program for Windows devices. Multiple users were completely locked out of their devices and the BitLocker password provided for them did not work either. We picked up one of the affected devices and experimented with it to try and see if we could bypass it somehow.

We managed to boot the device into startup settings, which allowed us to open a command prompt window. Inside the command prompt, we managed to unlock the BitLocker drive encryption using the "manage-bde"-command (Microsoft manage-bde, 2023.) We decrypted the drive that had Windows in it

using the BitLocker password and after that once the computer was restarted it went straight into Windows normally like it should.

We still needed to enable the BitLocker encryption back on due to company policy so we did just that hoping it would not cause the issue to appear again. Luckily, it did not so the issue lied somewhere else, so we needed to investigate why so many users were having the same exact issue.

We decided it would be best to start questioning users about what they did prior to the issue appearing. There was one thing in common with all the testimonies: They changed their password while working remotely. Now we just needed to test how changing your user accounts password to a different network than the one that is in the office would affect the device.

3.2 Week two

26.02.2024

Today we received reports from multiple different users that the office network was not working. We went to investigate the situation and found out that the Ethernet connection did not work. We then proceeded to test the wireless connection but that did not work either. We then disconnected the Ethernet cable and noticed that WLAN was working now. Usually when the computer does not recognize the network, the WLAN does not work either and it shows as an offline client in Active Directory.

We decided to narrow down the issue by checking drivers and available services and comparing them to working clients. The drivers were the same, but services were different as the “Wired AutoConfig” service was set to “Manual” instead of “Automatic.” These services and their settings are applied on a group policy level across the organization, so we needed to contact system administrators and inform them to update the policies by changing it back to “Automatic”

According to system administrators, this issue was caused by poor documentation and started appearing once we changed Windows versions a couple of weeks ago. Group policies were updated and sent to each device with the specific Windows version effectively fixing the issue.

27.02.2024

We were tasked with installing and delivering thirty computers to the academy. We formed a small group where we all had different tasks in the process pipeline to get it delivered and done as fast as possible. The author was tasked with installing the required academy software for the computers, which took most of the workday. The team took care of installing Windows on the devices and delivering them on site. We were running on a tight schedule as these devices had to be delivered before new courses started in spring. The author managed to get most of them done but the process could have been made much faster if the programs could be installed manually through an USB stick or external hard drive as then the computers do not have to be connected to the internet.

It was also tasked to be checked that every device was functioning properly and had all the necessary updates. This was author´s first-time performing quality control tests with manufacturer certified software and checking that the temperatures and performance did not drop using 3D benchmarks.

28.02.2024

The team was tasked to produce a guide on how to install Microsoft’s Dynamics AX as we did not have a proper guide for it at the time. We have not installed the software in some time and its package dependencies are quite old, so it did not work straight out of the executable.

First, we decided to look for all the necessary packages that are needed for the software to work. Luckily, the installer pointed out that VisualC2005 and VisualC2008 redistributable packages would be needed, so they were searched from web. They were found from Microsoft's website and installed manually. Microsoft has great documentation on how to use and where to find previous redistributable packages (Microsoft Visual Redistributable, 2024.). Then re-running the installer was tried to see if it still had the required packages which it did so we could now proceed with the install itself.

The installer allowed for different custom options on what to install. Our users only needed the "Client" option and nothing else, so it was made sure nothing else than the client were to be installed. The biggest issue came right after as we needed to figure out what the host servers name needed to be for installation purposes. We asked around the company's IT Department if they knew anything about where it was hosted and luckily, one of them gave us the address. There after which, installation was tried out and it went successfully through.

Once the program was opened, it complained about missing file structure. We had a look inside the program files folder to try to figure out why. We compared the 64-bit version to the one in Program Files(x86) and their structure was different. We copied the "Client" folder from x86 to regular Program Files and tried again. The program was now fully functional although we did not have access to it. We copied the shortcut to the user's folder and wrote all the steps down into a guide for others to follow.

29.02.2024

We had to install and prepare spare computers for the factory flowline. We had to prepare and continuously update them so that one computer can be replaced within an hour if something happens. This proved to be difficult as the computer could only be enabled and used by us, and it would take us an hour to drive there from our office.

Instead of relying on us being on the scene when the incident happens, we decided to set up the computer in a remote corner of the storage facility where it could stay on. We wrote instructions for the user on how to put it into use and to call us when it happens so we could have a look at it remotely to see that everything is working as expected.

We as a team have also decided to routinely go and check the computer every time, we pay visit the factory to make sure that it is still functional and is receiving updates and has not dropped out of the domain group it has been assigned to.

1.3.2024

We decided to start working on a guide for all new employees that details how they can use their computers, how to use them and who to contact in case problems arise. We also made a quick FAQ-type list of the most common problems and what to do in situations like that.

This has been in the works for some time, but it was always just a concept. We as a team decided to start working on it and planned to have it ready by the time summer trainees come in for the year. This also allows us to reflect on our work as we try to nail down the most common issues. We will look at all the incidents we had solved in the past year and try to get some data on the most common ones related to errors caused by the user.

3.3 Week three

4.3.2024

Today we received a minor update regarding the NVIDIA driver compatibility. Apparently, if the monitors are connected with a cable that has a Display Port to HDMI connector it works perfectly fine with the docking station and the GPU.

The issue is however that we do not have these cables to test the information we had received from the manufacturer.

This would also require us to order these cables, which will add to the costs, and to deliver them to all the users affected by the NVIDIA driver issue. We suggested that we would research for a more practical solution since delivering hundreds of cables is not very feasible.

The cable solution would also mean we do not have to apply the “Discreet Graphics” BIOS setting anymore, which would allow the users to use their laptops, screen when it is plugged into the docking station. This would make the devices more appealing to users since then they could use up to three screens if they wanted to.

5.3.2024

As we tried to install kiosk mode devices, we ran into a familiar issue. Previously as we tried to figure out how to get them to work with the new Windows version, we noticed that it did not function with the company network. As we investigated the issue, we found out eventually that a certain new patch that messed with custom images caused it. We removed the patch from the automatic updater and uninstalled it from all the devices affected.

However, the problem came up again as the newly installed devices had the patch applied to all of them. We initially did not have a clue as to why that was the case because it was removed. After some investigating however, we noticed that Microsoft had bundled this patch with other patches causing it to be re-applied again to all of the devices.

We had to remove the bundled patch from the automatic updater as well and un-install it from all of the devices once more. In the future we will pay closer attention to the specific patch so that this does not happen again.

6.3.2024

As we walked into office today to check if the devices, we had installed were ready we noticed something strange. The tablet devices did not connect to the internet. At first it seemed that this had something to do with the network in our end but after checking our que, it was clear that something weird was definitely going on.

Users were also reporting the same issue with their tablet devices. If every single tablet device had this same issue it could end up being catastrophic considering there are hundreds of them. The active directory was checked to see if there was some hint as to what was causing this issue.

It turned out that someone had sneakily changed the organizational unit of all the tablet devices into a new unit that did not have any network settings configured. We had to figure out who did this and why to resolve it. We made some calls and talked it through, and eventually all the tablets were moved back into their original organizational units, and they started working again. If this had not been noticed in time we would have had a much bigger issue on our hands.

7.3.2024

Substantial changes are coming to our office as we have had talks about an IT hub where users can look at devices and receive instructions from technicians on the most common problems and how to use their device. We also plan to create a stand where we can solve simple problems that users have like changing their password, updating their computer software, and installing new ones.

We must figure out where we can fit this IT hub into and who will oversee it. The IT hub would help us better reach out to users by offering them an alternative option to have their problems resolved so not everything needs to be done by call or by remote connection anymore.

The organization of the hub will be the hardest part as we have limited space and resources. We will have to see how the situation develops.

8.3.2024

When we were delivering devices, we ran into a user whose computer did not work properly with the PDM Add-In in Excel that is provided by SolidWorks. Most of the time we would solve this issue by re-installing SolidWorks, but we wanted to figure out a more sustainable solution since uninstalling it takes a long time. The process also resets the users' settings they have made in SolidWorks which is inconvenient for them.

First, we tried to edit the registry keys which affect the add-in functionalities inside Excel. This did not solve our issue, so we tried to copy the files of the add-in from the installation media and move them in the correct folders. This did not work either.

Next, we tried something a bit unorthodox as we had noticed that inside our accounts the add-in was working. This would indicate it has something to do with the Windows profile inside the machine itself. We renamed the registry key and the user folder inside the computer that was affected and re-created it by having the user log in to the computer. This would create the user folder and the registry key again for the specified user while keeping their data and settings intact inside the old folder.

This time the add-in was visible for the user and resolved our issue. It also is a much faster process as it only takes a few minutes to edit the folder and the registry key compared to re-installing the program which would usually take at least thirty minutes.

3.4 Week four

11.3.2024

We are trying to resolve a re-occurring problem with monitors flickering occasionally while users are using the device. Most of it is harmless and only lasts for a few seconds but we are thinking that it could be linked to the driver issue we have tried to resolve earlier.

We tested several types of cables to try to narrow down the problem. We noticed no difference between using HDMI, Display Port or USB-C as all of them would still cause flickering occasionally in our test devices. Our next suspect is the USB-C drivers in the computer itself but that is unlikely the case as this is only happening in computers that have a built-in GPU attached to them.

We are going to have contact the manufacturer and try and explain the situation to them if they know what is causing and can it even be resolved.

12.3.2024

Today we ran into an unusual problem where Windows had installed itself twice on a single hard drive. We have no idea what could have caused this as the only ones installing them are us and this happened while the computer was in use by the user. Our only option was to re-install Windows completely as the computer was not letting us boot, as it had no idea how to deal with multiple instances of the same operating system.

However, we immediately ran into an issue. Windows could not be installed on the hard drive and the image immediately gave an error. We decided that maybe if we completely wipe the disk before installing Windows it would go through. This guess turned out to be right as the installation started working right after the wipe.

We have no idea what caused this issue, and we never will find out as the team responsible for them does not have logs available of the time of the incident occurring.

13.3.2024

To make file transfers faster we have decided to use Window's "robocopy" command line tool (Microsoft Windows robocopy, 2023.). It works significantly faster compared to the regular NTFS file transfer method, which slows down a lot when there are multiple small files being transferred from the old machine to the new one.

To make it easier to use for everyone on the team we have started working on a script that automatically detects the IP address of both devices – the one currently in use by the user and the brand new one – and goes through the users Documents folder, Desktop folder and other folders that usually have transferable data.

With this, we can reduce our file transferring time from around 30 minutes to under 5 minutes, which is a significant improvement. However, it still needs some work put into it as none of us are familiar with such scripting.

14.3.2024

After some investigation of all sorts of documentation provided by the manufacturer, we were able to confirm that the docking station is at least supposed to work with current setup. One of our theories was that the current docking station did not have enough bandwidth to support two 27" monitors running on a 4K resolution at 60 Hz.

The documentation states however that it is more than capable of letting all the data through with two DisplayPort cables connected to it. Another theory was that if the computer is pushing updates through it might start flickering but it does not match with the problems description, as the flickering caused by patching is only temporary and happens rarely. Our flickering happens multiple times a day for certain users.

Next step is to use Advanced Driver Restore to see if running the device on all of the newest drivers solves the issue entirely.

15.3.2024

As we were testing the Advanced Driver Restore method, we also tested something different entirely with another user to narrow the problem down even further. If the docking station is not being used and instead plugging the monitors straight to the computer with a display cable and a HDMI cable it will not flicker. This narrows the problem down to three different possibilities: the USB-C connectors on the side of the laptop are malfunctioning in some way; DMA is not letting the docking station operate properly or the docking station itself is the culprit.

We have not received reports from the user that we tested the Advanced Driver Restore method on as they are away for today, but we are sure we will hear something about it in the coming week.

3.5 Week five

18.3.2024

Advanced Driver Restore did not resolve our issue with the flickering. We are going back to the drawing board with this one, but it will be put on the backburner for a while as we have a graver issue to focus on this week.

None of the monitors are functioning for some users. Usually this is fixed by re-installing the graphics driver or by updating the docking stations firmware. If that does not work we would then switch the docking station to a completely new one but in our case none of the standard fixes are working.

We have a workaround for this by connecting the monitors straight to the laptop as described previously but it hurts the usability experience of the computer as

one of the monitors has a slight delay as it is connected via USB-C causing it to be 59 Hz instead of 60 Hz.

19.3.2024

We have an issue with Thunderbolt compatibility between two different manufacturers devices. Installing all updates related to Thunderbolt will not solve the issue either. We do not explain why it works on some devices while not on some models. They are all Thunderbolt 3 compatible so they should work. There could be some sort of group policy issue that is causing them to be incompatible as they have a different Windows image installed on them and are in a different control group.

We also have often received devices that have warranty left but are beyond repair. We are trying to figure out a cost-effective solution with the customer to have these devices replaced.

20.3.2024

Today the manufacturer released a new BIOS update for the device model that we had problems with trying to get them to work with the docking station and monitors. The update had many features but the only one that could have some relation to our issue was a specific part that mentioned monitors and the docking station. The part that we were interested in specifically stated that it fixed an issue where insufficient wattage was supplied to the monitors while they were connected to the design model docking station.

It is unclear why something like that could have caused the issue as the monitors were on. However, the issue is resolved, and it was related to the product itself and not caused by any of the service updates we had rolled out for the computers. We are going to test if the flickering of the monitors could also be resolved by applying this BIOS update.

21.3.2024

Flickering has not disappeared from monitors since the update. We are trying to figure out something else that could help with it. We also ran into an issue where user’s laptop sometimes detached its own battery even after replacing it with a new one. We decided that we should investigate the issue further and try to determine if the issue lies in the motherboard or the connectors that go to the battery.

Other than that, our week has been hectic and filled with deliveries as new employees are coming in for the summer. We are well organized when it comes to delivering everything on time, but the process could be improved by automatic some manual tasks like filling out paperwork. We might run into an issue where we run out of hardware to deliver due to the ongoing strike.

22.3.2024

Today a tablet devices active pen was not functioning properly. We had never run into this issue, as they do not usually break or anything. Using a different pen worked fine on the tablet and its touchscreen was not harmed so the issue lied in the pen itself. We determined that it had ran out of battery or it was improperly charged with a device that was incompatible with the pen.

We did not have any spares in stock as we had never thought to order any, so it was suggested that we order some separately to hand out to users that run into a similar issue as they are part of the warranty of the device itself. We lack the technical expertise on how to replace a battery inside the active pen.

3.6 Week six

25.3.2024

We tried to resolve the flickering by using standardized cables to try to narrow it down to faulty cabling. This did not resolve the issue and flickering continued.

We tried to resolve it by changing both the computer and the docking station. No dice. As we had completely run out of options, we decided to call the manufacturer to ask for tips. Sadly, this did not really help since it would require us to use the firmware provided by them, which is not an option currently. We must narrow it down to a specific driver or functionality if we want to fix it, which will take a lot of time.

26.3.2024

In order to tackle the problem of the yearly summer employee wave we have decided to put all of our focus on installing devices, updating, and preparing them for delivery. We had to dig up older models with some warranty left so we can have enough functioning devices in stock. This also includes testing the devices – especially the older ones – to see if they are still fit to run all of the applications required by the users.

To make things worse it is also extremely difficult to ascertain the exact number of devices required for all the new employees, as we are never provided with a list or plan of any kind. We just have to prepare as many devices as possible and hope that it is enough. It definitely will cause issues for the workflow, and we should consider asking the customer for estimations on how many devices will be needed this spring.

27.3.2024

We received reports of a new issue related to the models with external graphics cards attached to them. Usually, we had disabled the hybrid graphics setting from BIOS to improve performance but today we learned that if you disable it, you could not change your computers brightness settings anymore. This is because the brightness controls in Windows operate using the integrated graphics card, which becomes disabled once you disable hybrid graphics.

In order to fix this, we decided to no longer touch that BIOS setting and turn it on remotely on every device that it was disabled in. Luckily, this is simple to implement, otherwise we would have hundreds of computers that we would have to update manually.

28.3.2024

We finally received USB sticks with file shredding software. This allows us to finally return some of the older devices without a warranty back to the vendor once they have been properly processed with the software. This has to be done, as there could be classified information on the hard drives of the computer and without shredding them with actual software the only way to truly destroy the contents of the drive would be to physically destroy it. This would make the computer unsellable without a proper replacement drive, which would cut down the possible profits that the old machine could still make for the vendor.

The process takes around 2 hours per computer to run, and we have hundreds of them so we decided to start processing the devices in between deliveries a few at a time so we can spend our time more efficiently.

3.7 Week seven

2.4.2024

The user could not use their scanner with a remote-controlled virtual machine. After some testing and troubleshooting the problem was narrowed down to the network conditions themselves as it did not work on any of the computers with similar setups.

The issue lies in the policy set up by the customer and I am going to inquire if we could make an exception for the users' machine as they really need the scanner to do their work properly. This issue is just an oversight on the

customers' part as there is no harm in letting this specific user use their scanner to do their work.

3.4.2024

We have started testing the functionality of devices that have warranty left but were previously deemed un-usable due to them having Windows bluescreen issues. We will be running memory tests and processing unit benchmarks to determine where the fault lies. Re-installing Windows usually does not solve these, so we are quite sure it is hardware related although we have not been able pinpoint what could cause these re-occurring issues as all the devices so far have passed all our tests.

We know something is wrong with them from experience as users return them to us after a few weeks of usage due to them receiving bluescreen issues. This would indicate that there is something wrong with the hardware but if we cannot pinpoint what component is causing these issues, we cannot replace the malfunctioning components. We are going to have to assess the situation and try to make some sense of it.

4.4.2024

Today we received reports that multiple computers had lost internet connection overnight seemingly out of nowhere without reason. We have dealt with this issue for a long time, and we know how to fix it as bringing the device back to our office and connecting it to our less restricted network allows it to function properly again on other networks as well.

This would indicate the issue has something to do with the network policies but the reason it decides to block some devices from entering it is still unclear. It could be related to failed Windows updates as it was the only commonality between all affected devices.

5.4.2024

We ran into an issue while delivering devices where a user asked me why they cannot access the intranet or the company's network in general. The devices in the location did not have access to it due to there being no internet there. They were using a modem to get internet access, but modems are not linked to the company network in any way. This could be circumvented with the use of a VPN but since they all had desktop computers VPN software was not initially installed on them.

I decided to take one of them with me to our office so I could install the VPN software to it. Turns out that the VPN software does not work on the desktop machines as it is not intended to be installed on them. The customer was contacted to ask if we could make an exception for that place as they need access to the intranet, and it would be better to install VPN on all of these than to start building network infrastructure around the building.

4 Summary

Reflecting back on the learning diary, lots of different things have happened in such a short time. Our team runs into so many different issues all the time that it is crucial to document all of them in case we run into them again since fixing some of them takes a lot of resources.

A great example of this is the docking station with multiple monitors issue which affected multiple users and took us a lot of research, trial and error to figure out and troubleshoot. Luckily, we managed to make some sense of it, and we can finally lay that issue behind us.

It could also speed up the process if we were allowed access to more tools which we could use for more accurate and faster troubleshooting when it comes to hardware related issues and driver issues.

Communication with different teams could also be improved so we can act upon issues faster once we have received permission. In this line of work, it is also extremely important that all the different teams have access to the same information, which is currently not the case. This will allow us to troubleshoot issues without asking if someone knows something about this.

Author also learned to appreciate the diverse nature of my work. Everything is connected in some way, although all the issues that produce the devices are still distinct from one another. Everything has reason and meaning but it is also chaotic as problems can come up anytime, even with simple things like monitor functionality. It is my job to try to make sense of it and control that chaos so that all users can have functional devices.

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