

## My Internship at Hale-Tech

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## 1. Introduction

I chose an internship here for the opportunity of troubleshooting many different networks, from residential all the way to small business, each having a different configuration I would expose myself to different scenarios and their unique challenges.

Interning at a managed IT service provider has been a challenging experience for me, particularly in learning about incident management. Throughout the internship, I've been exposed to real-world situations where I've gradually become more familiar with identifying and prioritizing incidents. Using incident management tools like ticketing systems and monitoring software has allowed me to start logging incidents and tracking their resolution progress. I've also had the opportunity to hone my problem-solving and troubleshooting abilities by tackling various technical challenges. Overall, interning at a managed IT service provider has provided me with a valuable learning environment to gradually develop the skills and knowledge needed to handle incidents effectively in professional IT settings.

Interning at a managed IT service provider has given me valuable insights into security assessment and compliance practices. Throughout my internship, I've had the chance to learn about conducting security assessments to identify vulnerabilities and risks in IT systems. This involved using various assessment tools and techniques to analyze network infrastructure, applications, and data security measures. Understanding the importance of compliance and the implications of non-compliance has been a significant aspect of my learning journey.

I've also delved into the world of security operations, learning how to monitor and respond to security incidents effectively. I've been exposed to various security monitoring tools and techniques, allowing me to detect potential threats and intrusions in real-time. Additionally, I've gained insight into the importance of establishing security protocols and procedures to ensure swift and appropriate responses to security incidents. Understanding the significance of continuous monitoring and proactive threat detection has been a daily occurrence of my learning journey. Overall, interning at a managed IT service provider has provided me with valuable hands-on experience in security operations and monitoring, equipping me with the knowledge and skills necessary to safeguard IT infrastructures against evolving cyber threats.

This paper serves as a reflective account of my internship journey, going over the intricacies of IT services, incident management, security assessment, compliance, and security operations. By documenting my experiences, challenges, and learning experiences, I aim to provide a comprehensive overview of the lessons gleaned during my time at Hale-Tech.

## 2. Beginning of the Internship

Hale-Tech specializes in providing businesses with IT solutions, including network monitoring, system maintenance, and help desk assistance. Moreover, their expertise extends to website marketing, encompassing services such as search engine optimization (SEO), content creation, and social media marketing. Hale-Tech's proficiency in both IT support and website marketing allows businesses to relieve the stress of internal IT issues and the responsibility of marketing campaigns to stay relevant.

Created by Daniel Hale who stepped out on his own in 2017, Hale-Tech turned from a side-project of resolving computer issues on the side to a business that supports over 30+ clients. Hale-Tech offers a diverse array of products and services designed to address the changing IT needs of businesses in the Hampton Roads area. From general troubleshooting and upgrades to hardware purchasing and installation, they provide comprehensive support to ensure optimal performance and reliability of computer systems. Their expertise extends to networking solutions, including wireless network installations and maintenance. With advanced network troubleshooting capabilities, Hale-Tech identifies and resolves connectivity issues, minimizing downtime and disruptions to operations. Moreover, their 24-hour on-call support ensures that clients receive timely assistance whenever technical issues arise, fostering a sense of security and peace of mind. Hale-Tech also handles server installations, upgrades, and ongoing monitoring and maintenance, delivering solutions tailored to meet the unique requirements of each client. Additionally, their partnership with cloud backup services offer a secure and reliable means of protecting critical data, mitigating the risk of data loss or corruption. Desirable customers are small businesses with anywhere from 3-30 employees with less than 3 physical locations locally Major customers are local Law firms that require more robust security compliance, IT support, and web marketing or development

My initial orientation was around two weeks of on the job training to familiarize myself with the company office, its systems, and the customer base. The office shares a building with evidently one of its customers. An electrician and HVAC company that had a warehouse as well shared the space but we have our own office with its own door to the parking lot. There are no enclosed offices, only a converted closet that houses the server rack for Hale-Tech equipment. There are five desks, one workbench, and a sitting area for conferencing. The space is an open office plan that can sometimes seem small if everyone is in office but when totally empty is quiet enough to hear a pin drop. The company has been flexible with my schedule when it comes to this internship. Over the past few weeks I have been able to schedule ahead of time to take off work for personal tasks. Being that I am mostly working unsupervised, as long as no project is scheduled I am able to make it work and get ahead of the work before leaving.

### 3. Management Environment

Generally I am unsupervised unless the situation requires elevation to a Tier 2 or Tier 3 issue or on large projects where multiple people are needed. I drive my personal car to customer locations and sometimes start my work day at customer locations. There are even full days where I do not see my boss but as long as my schedule is full and the work gets completed there are no complaints. I report to my direct supervisor, Daniel Hale.

### 4. Duties, Assignments, and Projects

My typical Monday kicks off with a review of missed calls and emails that have accumulated over the weekend. This initial step allows me to organize for the week ahead, allowing me to prioritize urgent issues and allocate my time effectively. The standup meeting with my coworkers and direct supervisor that follows provides a place to collaborate, discussing past accomplishments, ongoing projects, and upcoming deadlines.

Following the meeting, I dive into the day's tasks, which often involve addressing customer trouble tickets and resolving technical issues. From password resets to troubleshooting network connectivity issues. Flexibility is key as I balance scheduled work with new tickets, ensuring timely resolution and maintaining customer satisfaction.

Throughout the week, I may encounter scheduled jobs that demand a significant portion of my time. These projects, ranging from hardware installations to network configurations, allow me to work in a hands-on setting. Despite the complexity of these tasks, I approach each one happily, knowing that while I am on the jobsite I will only have to focus on that customer and they must receive my undivided attention if I don't want to make a mistake.

A central aspect of my role is documentation of all activities and interactions. The CRM system, RepairShopr, serves as a database of customer information. By logging each task and update, I ensure that my work is accounted for both for billing purposes to the customer and future reference for technicians after me.

Beyond the technical aspects of my role, I have also worked on my communication skills through regular interactions with clients. Effective communication is essential in understanding customer needs, troubleshooting issues, and conveying technical solutions in a clear and accessible manner. Building rapport and trust with clients has been important in creating long-term relationships that make future work and projects easier to accomplish due to the customers trust and familiarity with my work.

## 5. Skills and Knowledge

During my internship at Hale-Tech, I've had the opportunity to deepen my understanding and application of cybersecurity principles and practices. Prior to joining Hale-Tech, I possessed a basic knowledge of cybersecurity concepts, including the importance of strong passwords, antivirus software, and firewalls. However, my on-the-job experience at Hale-Tech has allowed me to expand my skills and knowledge in this area significantly.

One of the key areas where I've applied cybersecurity skills is troubleshooting. When addressing technical issues for clients, I've learned to approach each problem with a security mindset, considering potential vulnerabilities and threats that may be contributing to the issue. This has involved identifying and mitigating security risks, such as malware infections or unauthorized access attempts, as part of the troubleshooting process.

Furthermore, my role at Hale-Tech has involved working with network topology, creating network cables, and configuring switches, routers, and servers. These tasks have provided hands-on experience in implementing security measures at the network level, such as segmenting networks, implementing access controls, and configuring encryption protocols. By understanding how network infrastructure operates and how security measures are implemented within it, I've gained a deeper appreciation for the importance of securing networks against cyber threats.

In addition to technical skills, I've also developed expertise in phone setup, domain/mailbox migrations, and quoting/estimating projects. While these tasks may not seem directly related to cybersecurity, they play a crucial role in ensuring the overall security and integrity of IT systems. For example, proper configuration of phone systems and email servers can help prevent unauthorized access to sensitive information, while accurate quoting and estimating ensure that security measures are implemented within budget constraints.

## 6. Preparedness

In my curriculum at ODU I rarely experienced the ability to troubleshoot real world issues, I learned how things were supposed to work, but not what to do if they were not. It was up to me to engage in critical thinking to extrapolate the differences between a working system and broken one.

I have made several connections between what I learned in school and the skills and knowledge used during my internship at Hale-Tech. My education provided me with a strong foundation in IT fundamentals, including networking concepts, cybersecurity

principles, and troubleshooting techniques. This theoretical knowledge served as a framework upon which I could build practical skills and expertise in a real-world work environment. For example, the coursework I completed in networking and cybersecurity helped me understand the importance of network segmentation, access controls, and encryption protocols in securing IT systems. This knowledge was directly applicable to tasks such as configuring switches, routers, and servers at Hale-Tech, where I implemented these security measures to protect client networks against cyber threats.

Additionally, my internship experiences at Hale-Tech introduced me to new concepts, techniques, and skills that I hadn't encountered in school. For instance, working with RepairShopr, a CRM system used for logging tasks and updates, provided insights into customer relationship management and ticketing systems, which were new concepts for me. Moreover, hands-on experiences such as creating network cables and performing hardware installations introduced me to practical skills that were not covered extensively in my coursework but were essential for real-world IT support roles.

## 7. Fulfillment of Objectives

Incident Response Management has been a main duty of mine this period. I've had the chance to actively participate in identifying and analyzing security incidents within client networks. Ranging from investigating suspicious emails from potential fraudulent people to blocking and identifying the source of phishing attacks, each incident has provided valuable hands-on experience. Conducting Security Assessments and ensuring compliance with company standards has been both demanding and challenging. Each customer has different requirements whether they are a law firm, insurance agency, or residential client. The complex and varying nature of each network goes to show how each client is different and all require different cybersecurity needs. In Security Operations and Monitoring, I've delved into the intricacies of log analysis, threat detection, and security monitoring using tools like Atera which is a remote management software.

## 8. Highs of the Internship

One of the most motivating aspects of my internship at Hale-Tech was the opportunity to overcome challenges on a daily basis. Each day presented new and unique technical issues and obstacles to overcome, whether it was troubleshooting network connectivity issues or investigating security incidents. Overcoming these challenges not only provided a sense of accomplishment but also helped me grow professionally by expanding my problem-solving skills and resilience in the face of adversity. Additionally, one of the most exciting aspects of the internship was the opportunity to continuously learn new skills. Whether it was learning how to configure switches and routers, conducting security assessments, or using remote management

software for security monitoring, each day brought opportunities for skill development and growth. The hands-on nature of the internship allowed me to apply theoretical knowledge gained from school to real-world scenarios, solidifying my understanding and competence in various IT disciplines.

## 9. Lows of the Internship

One of the most discouraging aspects of my internship at Hale-Tech was grappling with the reluctance to ask for help when encountering challenging situations. At times, I found myself hesitant to seek assistance from my colleagues or supervisor, fearing that it might reflect poorly on my abilities or competence. This unwillingness to ask for help often led to prolonged struggles in resolving technical issues or completing tasks efficiently, ultimately hindering my progress and productivity. Secondly, grappling with mistakes made during the internship was another discouraging aspect. As with any learning experience, I encountered instances where I made errors or misjudgments while performing tasks or handling client issues. These mistakes, whether minor or more significant, could be disheartening and shake my confidence in my abilities. The fear of making mistakes sometimes led to hesitancy or indecision, further exacerbating the situation and impeding my growth and development.

## 10. Challenges

The primary challenge that stood out to me revolved around troubleshooting a network outage, where I encountered unfamiliar concepts and struggled to address them effectively. To provide context, one of the issues arose during a network outage at a relatively small funeral home. They reported losing internet connectivity after another local IT person replaced two smaller 8-port network switches with a larger 16-port switch. When I received the call for assistance, I found myself alone with limited information: new equipment had been installed, followed immediately by the outage. Initially, I attempted to restore internet access by reverting to the old equipment, but to my surprise, this did not resolve the issue. After contacting the internet service provider, who confirmed the modem was online and accessible via its IP address, I realized the problem likely originated internally. I began troubleshooting to isolate the issue, discovering that connecting directly to the modem restored internet access, but once connected to the switch, all connectivity stopped. Confused by this, I suspected potential conflicts within the switch's policies, until finding out it was not a smart switch and was primarily for signal distribution. Recognizing my limitations, I reached out to my boss for assistance. After approximately 45 minutes of joint troubleshooting, he identified the root cause: a network collision. This collision occurred due to a misconfiguration in the cable management, causing one of the Cat6 cables to loop back to the same switch. Consequently, the switch was inundated with redundant packets,



disrupting network communication. My boss highlighted a flaw in my approach: instead of testing each connection individually, I had reconnected all cables simultaneously. Had I taken the time to test each connection one by one, I would have identified the problematic cable sooner and without assistance.

## 11. Recommendations

Future interns entering this internship at Hale-Tech must prepare to swiftly adapt to diverse customer needs and manage interactions with multiple unique clients. This requires flexibility, the ability to understand varying requirements, and adeptness in tailoring solutions to meet each client's specific demands. By cultivating these skills before starting the internship, interns can effectively navigate the dynamic landscape of client support and ensure positive experiences for all customers encountered at Hale-Tech.

## 12. Conclusion

My main takeaway from my internship experience at Hale-Tech will always be the practical skills and knowledge gained in the field of IT support and cybersecurity. I've honed my adaptability, problem-solving, and effective communication skills in addressing diverse client needs and resolving technical issues. This experience has provided me with a deeper understanding of the complexities of IT systems and has strengthened my confidence in my abilities as an IT professional.

Moving forward, my internship experience will greatly influence the remainder of my college time at ODU. I plan to apply the skills and knowledge acquired during my internship to my coursework, projects, and extracurricular activities. Additionally, I intend to seek out opportunities for further hands-on experience and professional development to build upon the foundation laid during my internship.

In conclusion, my internship experience will significantly influence my future professional path and planning. I plan to pursue opportunities for continued learning and advancement, such as certifications and specialized training, to further develop my expertise and credibility as an IT professional. Ultimately, I aim to build a successful career in cybersecurity, leveraging the skills and knowledge gained from my internship to make myself stand out in the future.