

An Overview of IT and Network Operations: Internship Experience at Nazabi Group

by

Fahim Sadik (213014027)

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Bachelor of Science in Computer Science and Engineering

Under the supervision of

Md. Nazmul Abdal

Lecturer (Academic)

Riajul Karim Adil

Project Manager (Industry)



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
UNIVERSITY OF LIBERAL ARTS BANGLADESH**

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DECLARATION

Internship Title	An Overview of IT and Network Operations: Internship Experience at Nazabi Group
Author	<i>Fahim Sadik</i>
Student ID	213014027
Supervisor (Academic)	Md. Nazmul Abdal
Supervisor (Industry)	Riajul Karim Adil

I declare that this internship report entitled *An Overview of IT and Network Operations: Internship Experience at Nazabi Group* is the result of my own work except as cited in the references. The internship report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Fahim Sadik
213014027

Department of Computer Science and Engineering
University of Liberal Arts Bangladesh

Date: April 21, 2026



Department of Computer Science and Engineering
University of Liberal Arts Bangladesh
Mohammadpur, Dhaka - 1207

CERTIFICATE

This is to certify that the internship report entitled **An Overview of IT and Network Operations: Internship Experience at Nazabi Group**, submitted by **Fahim Sadik** (Student ID: 213014027) is a undergraduate student of the **Department of Computer Science and Engineering** has been examined. Upon recommendation by the examination committee, we hereby accord our approval of it as the presented work and submitted report fulfill the requirements for its acceptance in partial fulfillment for the degree of *Bachelor of Science in Computer Science and Engineering*.

Md. Nazmul Abdal, Lecturer (Academic)

University of Liberal Arts Bangladesh

Riajul Karim Adil, Project Manager (Industry)

Nazabi Group

Place: Dhaka

Date: April 21, 2026

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Fahim Sadik

University of Liberal Arts Bangladesh

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Dedicated to my family
My compass and my anchor.
Your love has been my
guidance, and your sacrifices
have been my opportunity.
This achievement belongs to
you as much as it does to me.

– Fahim Sadik

EXECUTIVE SUMMARY

My time at Nazabi Group has been a major shift from classroom theory to the heavy-lifting of real-world network operations. My main goal for this internship was to see how a top-tier IT firm actually builds and manages data centers, moving beyond just the diagrams I've seen in textbooks. Nazabi handles some of the most critical government infrastructure in Bangladesh, so it's been the perfect place to see how these massive services are actually kept running 24/7.

A big part of my learning happened at a facility the company previously built for the Department of Telecommunications (DOT). While I did learn about the "shell" of the building—things like precision cooling and power redundancy—I spent most of my energy inside the server racks. I was hands-on with the hardware, specifically learning how to configure Cisco routers and switches to build the network's backbone. I also spent a lot of time working on HP servers, where I focused on setting up firewalls and various filtering rules to keep the infrastructure secure. It was a great feeling to see the physical connections I built actually start passing data securely.

Right now, I'm directly involved in an even bigger project: building the new data center for the Chittagong Port. This has been an incredible experience because the stakes are so high—it's a central hub for the country's economy. I've been helping with the technical planning and the actual implementation of the network architecture. This project has really helped me connect my academic background in systems and security with the physical reality of a high-traffic maritime data hub. It's one thing to study network congestion in a lab, but it's another thing entirely to plan for it at a port.

Outside of the hardware side, I also got some solid training in web development. I learned how to build and tweak websites and eventually managed to put together a few smaller sites on my own. It gave me a much better perspective on the full IT stack, showing me how the software layer interacts with the server hardware I was configuring earlier in the day.

Finally, shadowing senior engineers during our site visits to the Chittagong Port was probably the most "human" part of the job. I got to watch how they handled technical crises on the spot and how they spoke with government officials. Those

visits taught me that being an engineer isn't just about the code or the cables; it's about professional conduct and clear communication. Overall, this internship at Nazabi Group has been a massive boost for my technical skills and has given me a real-world foundation that I couldn't have gotten anywhere else.

Keywords: Networking, ISP Operations, Client Support, Routers and Switch Configuration, WordPress, CSS, JavaScript .

Contents

1	Introduction	1
1.1	Objective of the internship report	2
2	Background	4
2.1	Overview of Nazabi Group	4
2.2	Mission of Nazabi Group	5
2.3	Vision of Nazabi Group	5
2.4	Purpose of the Internship	5
3	Scope of Work	7
3.1	Overview of Internship Activities	7
3.2	Technical Operations and Infrastructure	7
3.3	Project Involvement and Field Support	8
3.4	Professional and Operational Growth	9
4	Internship Activities	10
4.1	Introduction of the Organization	10
4.2	Work Accomplishment	10
4.3	Challenges Faced	12
5	Analysis and Findings	14
5.1	Learning and Development	14
5.1.1	Enterprise Network Infrastructure: LAN vs. WAN	14
5.1.2	DNS Management and Traffic Flow	15
5.1.3	Advanced Troubleshooting and Network Diagnostics	15
5.1.4	Router and Switch Configuration (Cisco and MikroTik)	15
5.1.5	Data Center Architecture: The DOT Project	17

5.1.6	Traffic Intelligence: Allot and F5	17
5.1.7	The Linux Environment	17
5.1.8	Cybersecurity and Cryptography in Practice	18
5.2	Tools and Technologies	18
5.2.1	Security and Traffic Intelligence Tools	18
5.2.2	Network Monitoring and Management	20
5.2.3	Infrastructure Mapping and Documentation	21
5.2.4	Practical Experience and Technical Growth	21
5.3	Operational Guidelines for Technical Infrastructure	22
5.4	Impact of the Internship	23
6	Conclusion and Recommendation	25
6.1	Conclusion	25
6.2	Limitations	26
6.3	Recommendations	26

List of Figures

1.1	Internship Objectives	3
2.1	Nazabi Group	5
5.1	Key Network Troubleshooting and Configuration Skills Learned . . .	16
5.2	Sophos Security Solutions	19
5.3	F5 Networks Official	19
5.4	Allot Traffic Intelligence	20
5.5	SolarWinds Network Monitoring	20
5.6	PuTTY SSH Client	20
5.7	Microsoft Visio Infrastructure Mapping	21
6.1	Appointment Letter	28

List of Tables

5.1	Core Tools and Technologies at Nazabi Group	21
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Chapter 1

Introduction

This chapter gives a quick breakdown of my internship, starting with why companies like Nazabi and Blue Solutions are so central to Bangladesh's tech growth. It covers the basic need for solid IT infrastructure today and maps out exactly what I set out to achieve during my time working on these large-scale projects.

In today's world, you can't really separate economic growth from digital connectivity. Everything from government services to daily corporate tasks now lives on the cloud or across massive networks. Because of this, the pressure on data centers and network providers has skyrocketed. It's not just about "having internet" anymore; it's about having a system that is secure enough to handle cyber threats and fast enough to manage a country's worth of data. This is where firms like Nazabi Group come in—acting as the architects who build the physical and digital foundations that keep everything running.

Nazabi Group is a sister concern of Blue Solutions Ltd, a heavy hitter in the Bangladesh IT sector known for winning and executing major government tenders. During my internship, I worked as part of the Nazabi team on these high-stakes projects. One thing that sets this organization apart is its role as an official distributor for global giants like Cisco, Allot, and F5. This means the work isn't just about selling hardware; it's about designing, developing, and deploying fully operational network ecosystems from the ground up for massive clients like the Department of Telecommunications (DOT) and the Chittagong Port Authority.

This report is a record of what I learned while getting my hands dirty with server configurations, network security, and data center builds. It's an analysis of how the theories I learned in my classes actually hold up when you're facing the real-world demands of national infrastructure.

1.1 Objective of the internship report

The following points highlight what I focused on during my time at Nazabi::

- **Understanding Data Centers from the Inside Out:** I wanted to move past the diagrams and actually see how Tier-standard data centers work—from the cooling units and power backups to how the server racks are logically mapped.
- **Hands-on with Enterprise Gear:** A major goal was to get practical experience configuring the “big” hardware. This meant working directly with Cisco routers and switches and setting up HP servers to create stable, high-performance network backbones.
- **Security and Traffic Control:** I aimed to learn how to actually protect these networks. This involved learning about firewalls and filtering protocols, using tools from F5 and Allot to keep the infrastructure safe from outside attacks.
- **Applying Theory to Government-Scale Projects:** It was important for me to see how academic concepts translate to massive projects like the Chittagong Port Data Center, where the technical requirements are much stricter than a standard office setup.
- **Learning the Corporate “Hustle”:** Beyond the tech, I wanted to see how a project-driven firm operates—handling government stakeholders, working under tight deadlines, and learning the professional etiquette that comes with high-level site visits and troubleshooting.

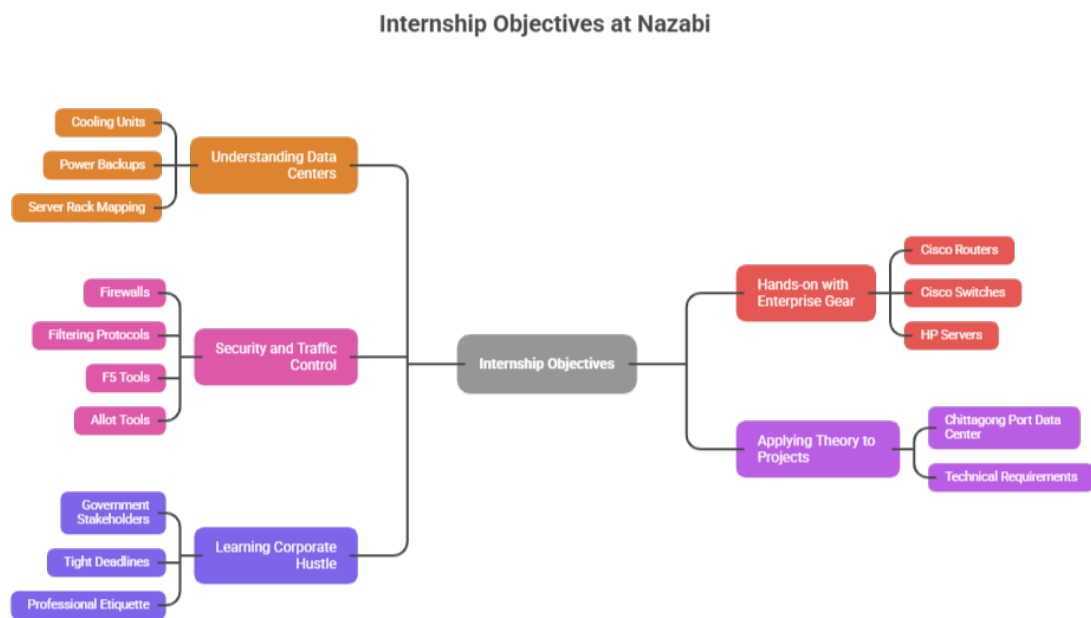


Figure 1.1: Internship Objectives

Chapter 2

Background

This chapter gives a closer look at Nazabi Group—what they do, how they fit into the bigger picture of Bangladesh’s tech industry, and the kind of environment I worked in. It’s important to understand the company’s background to see why the projects I worked on, like the Chittagong Port data center, are such a big deal for the country’s infrastructure.

2.1 Overview of Nazabi Group

Nazabi Group is a major player in Bangladesh’s IT sector, but they aren’t just an ISP; they specialize in the heavy lifting of designing and building massive network infrastructures and data centers. The company is a key sister concern of Blue Solutions Ltd, which is a well-known name in the industry for handling large-scale government tenders and high-value IT projects.

While Blue Solutions often manages the broader strategic side, Nazabi is where the technical execution happens. One of the coolest things about the company is that they are official distributors and system integrators for global tech giants like Cisco, Allot, and F5. This means they don’t just “use” the tech—they are responsible for designing and deploying fully operational network ecosystems for critical national entities, including the Department of Telecommunications (DOT) and the Chittagong Port Authority.

Their service list goes way beyond simple internet. They handle everything from Tier-standard data center construction and precision cooling to complex power redundancy and enterprise-grade security. Since they work with national-level data hubs, the focus is always on 24/7 reliability and high-performance hardware.



Figure 2.1: Nazabi Group

2.2 Mission of Nazabi Group

The mission at Nazabi Group is centered on building a solid digital backbone for Bangladesh. They aim to bring global tech standards to local projects, ensuring that the infrastructure they build today can handle the country's growth tomorrow. Their goal is "Right-First-Time" deployment—making sure the foundation is rock solid from day one so that the nation's digital economy has a secure place to grow.

2.3 Vision of Nazabi Group

Nazabi's vision is to become the go-to authority for data center technology and systems integration in South Asia. They want to see a fully connected Bangladesh where every major government and commercial hub runs on a world-class, secure network. By partnering with global brands, they're trying to set a new benchmark for technical excellence in the local ICT sector.

2.4 Purpose of the Internship

This internship wasn't just about sitting in an office; it was designed to be a bridge between my university textbooks and actual engineering. Getting to work alongside senior engineers on projects like the Chittagong Port Data Center was a rare chance to see how a massive project moves from a blueprint to a physical, working facility. It allowed me to take the networking and security theories I learned in class and apply them to real hardware in a high-pressure environment.

A big part of my focus was mastering professional-grade gear. I spent a lot of time learning the command-line interfaces for Cisco routers and switches and

setting up HP servers. Unlike a lab at school, I had to learn about live traffic management and how to set up security filtering that actually works. I also got exposed to high-level monitoring tools from F5 and Allot, seeing firsthand how network health and cyber threats are managed on a national scale.

Beyond the technical side, the internship really helped me grow professionally. Going on site visits to the Chittagong Port taught me how to work in a team, how to talk to government stakeholders, and how to troubleshoot critical errors when the clock is ticking. For anyone aiming for a career in network engineering, this was the perfect place to get a head start.

Chapter 3

Scope of Work

This chapter breaks down the actual tasks and projects I took on during my time at Nazabi Group. It's a look at how I moved from observing professional workflows to actually getting my hands on the hardware and software that keeps major government operations running.

3.1 Overview of Internship Activities

My internship was centered on two main pillars: data center infrastructure and high-level network management. Because Nazabi Group works so closely with Blue Solutions Ltd on government tenders, the workflow was fast-paced and very technical. I wasn't just watching from the sidelines; I was under the direct supervision of senior engineers who are responsible for the country's most critical networks.

The scope of my work was split between the office and actual project sites. This gave me a 360-degree view of how a project moves from the design phase to physical installation and, finally, to the configuration of live traffic. I learned how teams coordinate to deliver 24/7 connectivity and how specialized hardware is integrated to meet the strict security standards required by public sector clients.

3.2 Technical Operations and Infrastructure

A huge part of my role involved moving past basic networking and into the world of enterprise-level systems. I spent a lot of time "under the hood" of the network, focusing on:

- **Advanced Device Configuration:** Through training and hands-on sessions, I learned to configure Cisco routers and switches. This went beyond basic IP setup—I was working on building the actual backbone of the network, ensuring data could move efficiently across complex topologies.
- **Server and Security Setup:** I spent significant time configuring HP servers, specifically focusing on the security layer. This included setting up firewalls, defining filtering rules, and ensuring that the network infrastructure was hardened against external threats.
- **Professional Monitoring Tools:** I got real-world experience with high-end monitoring and optimization platforms. I worked with Allot for traffic management and F5 for load balancing and security. These tools are essential for keeping an eye on network health, latency, and overall service availability at a national scale.

3.3 Project Involvement and Field Support

The most exciting part of the internship was being out in the field, specifically working on major infrastructure projects. This hands-on work helped me understand the “physical” side of the job that you can’t learn in a lab.

- **Department of Telecommunications (DOT) Site:** I spent time at the data center Nazabi built for the DOT. Here, I saw how precision cooling, power redundancy, and high-density fiber cabling all come together to create a stable environment for server racks.
- **Chittagong Port Data Center Project:** I am currently involved in the development of the new data center for the Chittagong Port Authority. My work here involves assisting in the technical implementation and planning to ensure the infrastructure can handle the massive data traffic of a major maritime hub.
- **Network Optimization:** Working with senior engineers, I helped identify bottlenecks in existing setups, learning how to optimize connections and troubleshoot hardware failures in real-time to prevent service downtime.

3.4 Professional and Operational Growth

Beyond the cables and code, this internship taught me how a top-tier IT firm actually operates. This included:

- **Stakeholder Interaction:** I observed how our engineers communicate with government officials and corporate clients, learning how to explain technical issues in a professional and clear way.
- **Web Development Integration:** I received training in website making and modification, even building a few small-scale sites. This helped me see the “full stack”—from the physical server hardware to the software that the end-user actually interacts with.
- **Operational Discipline:** I gained a deep respect for the “Right-First-Time” approach. In projects like the Chittagong Port, there is very little room for error, and I learned how to follow strict protocols for documentation and system testing.
- **Team Coordination:** I saw firsthand how different departments—from hardware procurement to software security—must stay in perfect sync to deliver a project on time and within the specific requirements of a government tender.

Chapter 4

Internship Activities

4.1 Introduction of the Organization

Nazabi Group is a key player in Bangladesh’s rapidly evolving IT infrastructure and data communication landscape. Operating as a specialized sister concern of Blue Solutions Ltd, the company has built a reputation for handling high-value government tenders and large-scale digital transformations. While Blue Solutions acts as the strategic front, Nazabi provides the specialized engineering power needed to design and deploy complex network ecosystems.

A defining feature of the organization is its role as an official distributor and system integrator for global technology leaders like Cisco, Allot, and F5. This partnership allows Nazabi to implement world-class hardware in local projects, ensuring that national infrastructure—like that of the Department of Telecommunications (DOT)—is built to international standards. Over the years, the company has expanded from basic networking to becoming a full-service provider for Tier-standard data centers, enterprise security, and managed IT services.

Currently, Nazabi Group is heavily involved in some of the most critical infrastructure projects in the country. Their work ensures that major hubs, such as the Chittagong Port, have the robust, secure, and scalable network foundations required to keep the national economy moving.

4.2 Work Accomplishment

My time at Nazabi was structured to move me from basic orientation to handling complex server and network configurations. My primary role was to assist senior

engineers in the field and learn the “logic” behind large-scale infrastructure.

Weeks 1–3: Orientation and Fundamental Networking Concept

The initial phase was all about understanding how a high-level Network firm operates.

- Participated in orientation sessions regarding corporate ethics and how to represent the company when dealing with government stakeholders.
- Studied the relationship between Nazabi and Blue Solutions to understand how government tenders are executed.
- Learned about the core service offerings: from data center “shell” construction (cooling/power) to the active networking layer.
- Gained a foundational understanding of how a backbone network is structured to support massive clients like the DOT.

Weeks 4-7: Hardware Configuration and Security Layering In the second phase, I moved into hands-on technical work, focusing on the hardware that actually runs the data centers.

- Learned to navigate the command-line interfaces for Cisco routers and switches, moving beyond basic setups into VLANs and routing protocols.
- Handled the configuration of HP servers, focusing specifically on the installation and setup of firewalls.
- Learned to build filtering rules and connection protocols to ensure the network was hardened against unauthorized access.
- Got exposed to enterprise-level monitoring tools from Allot and F5, learning how to track bandwidth, latency, and load balancing across a national-scale network.
- Assisted in surveying existing network layouts to identify bottlenecks or hardware inefficiencies.

Weeks 8–12: Data Center Projects and Web Integration

The final weeks were the most intense, involving major site work and software-side training.

- Actively worked on the Chittagong Port Data Center project, assisting in the technical implementation of the network architecture.
- Gained deep insights into Data Center redundancy, learning how power and data failovers are managed to ensure 100 percent uptime.
- Received training in web development and modification, eventually building several small-scale sites to understand how software interacts with the server hardware I configured.
- Spent time at the DOT site to observe the maintenance of precision cooling and high-density fiber backbones.
- Completed detailed documentation and technical reports based on the configurations and site audits performed during the project.

4.3 Challenges Faced

Adapting to a professional engineering environment was quite a jump from university labs. I faced several hurdles that forced me to sharpen my skills quickly.

- Bridging Theory and Reality: The biggest shock was seeing how much more complex real-world networking is compared to a textbook. Configuring a Cisco router for a national port involves far more security layers and “what-if” scenarios than any classroom exercise.
- The Learning Curve of Specialist Gear: While I knew the basics, working with high-end tools from F5 and Allot was a challenge. These systems have complex dashboards and real-time data that required a lot of extra study and guidance from senior engineers to master.
- Physical and Logistical Demands: Working on the Chittagong Port project involved a lot of travel. I often had to leave early in the morning and wouldn’t get back until late at night. Maintaining high energy levels during long site

visits, especially in a high-pressure environment where mistakes aren't an option, was definitely a test of my stamina.

- **Decision Making Under Pressure:** In the field, problems need to be solved immediately to avoid downtime. Learning to think on my feet and make fast, accurate technical decisions under the supervision of senior staff was a major adjustment.

To overcome these, I spent a lot of my "off-hours" reading technical manuals for HP and Cisco gear and never hesitated to ask the senior engineers for a "deep dive" on why they made certain configuration choices. This proactive approach helped me turn these challenges into a solid foundation for my future career.

Chapter 5

Analysis and Findings

5.1 Learning and Development

My time at Nazabi Group was a massive learning curve that forced me to bridge the gap between classroom theory and national-scale IT operations. Working under the umbrella of Blue Solutions Ltd, I wasn't just looking at small office setups; I was witnessing how a major systems integrator designs and maintains the "digital backbone" of the country. This chapter breaks down the core technical areas I focused on, from the physical layer of data centers to the logical configuration of high-end network security gear.

5.1.1 Enterprise Network Infrastructure: LAN vs. WAN

While I understood the basic definitions of LAN and WAN from my studies, seeing them implemented for a client like the Chittagong Port Authority changed my perspective. In a massive project like this, the LAN isn't just a few computers; it involves hundreds of high-speed nodes connected via fiber.

I learned that for an organization like Nazabi, the "WAN" side is even more complex. Since Nazabi provides infrastructure for government tenders, the WAN often involves dedicated point-to-point fiber links and MPLS circuits that connect remote sites back to a central Data Center. Understanding this distinction was critical when I was assisting engineers in mapping out the connectivity for the Port's new facility.

5.1.2 DNS Management and Traffic Flow

At Nazabi, I saw how DNS is more than just a “phonebook” for the internet; it is a tool for traffic management. For enterprise clients, we often deal with internal DNS resolution to keep local traffic within the network, reducing latency and increasing security.

During my training, I looked at how recursive resolvers and authoritative servers work together. Specifically, I learned how records like **A**, **MX**, and **CNAME** are managed on professional-grade servers to ensure that services like government web portals or email gateways remain reachable. Seeing a “DNS Lookup” in a real-world environment showed me how even a small misconfiguration in a TLD pointer can take an entire service offline.

5.1.3 Advanced Troubleshooting and Network Diagnostics

One of the most valuable skills I picked up was a structured approach to troubleshooting. Instead of just guessing what was wrong, the senior engineers taught me to follow the OSI model layers. We dealt with real issues like packet loss on fiber links or routing loops.

Tools of the Trade:

- **Ping and MTR:** We used these to check if a Cisco router at a remote site was reachable and to measure the Round Trip Time (RTT). If we saw high latency, we used MTR (My Traceroute) to see exactly which hop was dropping packets.
- **Cisco CLI Diagnostics:** I learned to use commands like *show ip interface brief* and *show log* to identify hardware failures or port flapping on Cisco switches.
- **NSLOOKUP and Dig:** These were my go-to tools when a client couldn’t access a web service, helping me verify if the problem was a DNS resolution failure or a firewall block.

5.1.4 Router and Switch Configuration (Cisco and MikroTik)

This was the “heart” of my internship. Since Nazabi is an official distributor for Cisco, I got to work with enterprise-grade gear that I had never seen in a lab.

Cisco Enterprise Configuration: I spent hours learning the Cisco CLI. I moved beyond basic IP assignment and worked on:

- **VLAN Segmentation:** Learning how to logically separate traffic (e.g., separating the Port's CCTV traffic from administrative data).
- **Trunking and Encapsulation:** Setting up 802.1Q trunks to allow multiple VLANs to travel across a single fiber link.
- **Static and Dynamic Routing:** Configuring the default routes that tell a gateway exactly where to send outgoing port traffic.

MikroTik in the Field: For smaller nodes or specific ISP-style tasks, we used MikroTik. Coming from a zero-knowledge base with MikroTik, I learned how to use WinBox to set up DHCP Servers, NAT (Network Address Translation), and basic firewall filter rules. It was a great way to see a different philosophy of network management compared to Cisco.

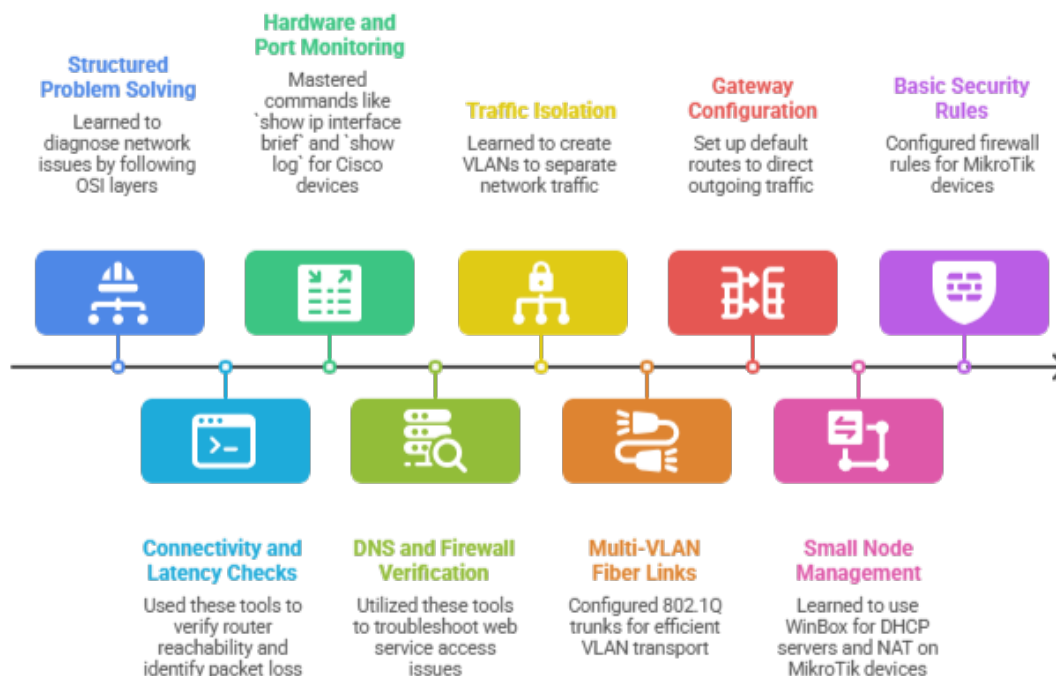


Figure 5.1: Key Network Troubleshooting and Configuration Skills Learned

5.1.5 Data Center Architecture: The DOT Project

A unique part of my findings was observing the "Physical Layer" at the Department of Telecommunications (DOT) data center. I learned that networking isn't just about code; it's about the environment.

I analyzed how Nazabi integrates **Precision Cooling** and **Power Redundancy** (UPS/Generators) to keep HP servers and Cisco switches running 24/7. Seeing the high-density fiber cabling and the "Cold Aisle" containment at the DOT site gave me a full-picture understanding of what "Infrastructure" really means.

5.1.6 Traffic Intelligence: Allot and F5

Nazabi works with specialized brands like **Allot** and **F5**, which offer "Layer 7" intelligence.

- **Allot Traffic Shaping:** I observed how Allot is used for Deep Packet Inspection (DPI). We could see the difference between critical database traffic and general browsing, allowing us to "shape" the bandwidth so that the Chittagong Port's operations always take priority.
- **F5 Load Balancing:** I learned how F5 devices sit in front of HP server clusters. They distribute incoming requests so no single server gets overwhelmed. This was an encouraging moment for me regarding how large-scale websites stay online under heavy load.

5.1.7 The Linux Environment

Almost every server I worked with at Nazabi ran on Linux. I learned that for a system administrator, the CLI is much more powerful than a GUI. I mastered basic navigation (`cd`, `ls -la`, `pwd`) and file editing with `nano` and `vi`.

One of the most important things I learned was **Permissions and Ownership**. Using `chmod` and `chown` correctly is the first line of defense in Linux security. For example, ensuring that a web server can read a file but not modify its own configuration files is a basic yet vital security practice I applied during our web development training.

5.1.8 Cybersecurity and Cryptography in Practice

Working with government data meant that security was always at the top of the list. I learned how the **CIA Triad** (Confidentiality, Integrity, and Availability) is actually applied:

- **Confidentiality via VPNs:** We used encryption to make sure that data moving between the Port and the central office couldn't be intercepted.
- **Integrity via Hashing:** I learned how hashes are used to verify that a firmware update for a Cisco switch hasn't been tampered with.
- **Availability via Redundancy:** By setting up "Dual Fiber" paths, we ensured that if one cable is cut, the port doesn't lose connectivity.

Overall, these findings represent a massive shift in my technical competence. I went from "knowing" about routers to "configuring" an national-scale network, and that hands-on experience is something I'll carry with me throughout my career.

5.2 Tools and Technologies

Throughout my internship at Nazabi Group, I had the opportunity to work with a specialized suite of professional tools that are the industry standard for high-end network infrastructure and security. Because Nazabi handles critical government projects through Blue Solutions Ltd, the tools I used weren't just for basic monitoring; they were essential for managing national-scale data traffic, securing server environments, and documenting complex architectures.

5.2.1 Security and Traffic Intelligence Tools

In a high-stakes environment like the Chittagong Port or the DOT, security and traffic control are the top priorities. I gained hands-on experience with the following platforms:

Sophos Firewall: I worked with Sophos XG/XGS series firewalls to understand how perimeter security is managed. I learned how to configure policies that filter incoming and outgoing traffic, manage VPN tunnels for secure remote access,

and monitor real-time threats. Seeing how Sophos handles Synchronized Security helped me understand how a firewall can automatically respond to an infected endpoint on the network.



Figure 5.2: Sophos Security Solutions

F5 BIG-IP (Application Security): Learning about F5 was a major highlight. I observed how F5 acts as an Application Delivery Controller (ADC). Beyond just load balancing traffic across HP servers, I learned how its Web Application Firewall (WAF) modules protect government web portals from sophisticated attacks like SQL injection and cross-site scripting (XSS).



Figure 5.3: F5 Networks Official

Allot and NetXplorer: While some tools only show if a link is "up," Allot (specifically through the NetXplorer interface) allowed me to see exactly what was happening inside the data stream. I learned how to use NetXplorer to perform Deep Packet Inspection (DPI), which is vital for an ISP-level environment. It allowed us to categorize traffic and ensure that critical maritime or telecommunications data received the necessary priority over general web traffic.



Figure 5.4: Allot Traffic Intelligence

5.2.2 Network Monitoring and Management

To keep a network of this scale running, we used a combination of real-time monitoring and remote access tools:

SolarWinds: I was introduced to SolarWinds for comprehensive network performance monitoring. It provided a “single pane of glass” view where I could see the health of our Cisco routers and switches. I learned to analyze bandwidth charts and set up alerts for high CPU usage or port errors, which is crucial for proactive maintenance.



Figure 5.5: SolarWinds Network Monitoring

PuTTY: This was my primary tool for daily administrative tasks. I used PuTTY to establish secure SSH connections to the Command Line Interface (CLI) of Cisco switches and Linux servers. Mastering the CLI through PuTTY was essential for performing fast configurations and troubleshooting without relying on a GUI.



Figure 5.6: PuTTY SSH Client

5.2.3 Infrastructure Mapping and Documentation

Microsoft Visio: One of the most important things I realized is that a network you can't visualize is a network you can't fix. I used Microsoft Visio extensively to design infrastructure maps and logical topology diagrams. Whether it was mapping out the new Chittagong Port Data Center or documenting the fiber paths at the DOT, Visio was my go-to for creating professional blueprints that engineers use for troubleshooting and future expansions.



Figure 5.7: Microsoft Visio Infrastructure Mapping

Tool Name	Application in My Internship
Sophos	Used for network-edge security, firewall rule configuration, and VPN management.
F5 BIG-IP	Focused on application-level security, load balancing, and WAF protection.
Allot NetXplorer	Used for deep packet inspection (DPI), traffic shaping, and bandwidth optimization.
SolarWinds	Centralized monitoring of device health, uptime, and network performance trends.
PuTTY	The standard tool for SSH/Telnet access to Cisco, HP, and Linux CLI environments.
Microsoft Visio	Used for creating detailed technical maps and infrastructure diagrams of project sites.

Table 5.1: Core Tools and Technologies at Nazabi Group

5.2.4 Practical Experience and Technical Growth

Moving from textbooks to the actual server racks at Nazabi Group was a transformative experience. I quickly learned that in a professional environment, "good

enough” isn’t an option—especially when working on national infrastructure.

A significant part of my learning involved troubleshooting connectivity issues that were often more complex than they appeared. For instance, I saw how a simple hardware misconfiguration or a slightly damaged fiber patch cord could cause intermittent packet loss that SolarWinds would pick up immediately. I also learned the practical differences between 2.4 GHz and 5 GHz wireless deployments during site surveys, noticing how physical obstructions in a port environment drastically affect signal penetration.

Working with HP servers and Cisco gear taught me the importance of a “clean” installation. I assisted in the physical racking of equipment and learned how structured cabling and proper labeling are just as important as the code inside the router. By the end of my term, I could confidently distinguish between issues originating from the ISP backbone versus those caused by client-side firewall misconfigurations. This analytical mindset, combined with the power of tools like F5 and Allot, has given me a solid foundation for a career in network engineering.

5.3 Operational Guidelines for Technical Infrastructure

During my time at Nazabi Group, I realized that managing national-level infrastructure requires a strict set of operational habits rather than just technical “know-how.” Because we worked with high-stakes systems for the Chittagong Port and the DOT, following a structured guideline was essential to prevent downtime or security breaches.

The first rule of thumb in this environment is the management of access. Since Nazabi and Blue Solutions operate on role-based access control (RBAC), having the correct permissions is vital. Whether using PuTTY to access a Cisco switch or logging into the Sophos firewall dashboard, it is critical to use secured management networks (OOB) and never share administrative credentials.

For real-time monitoring tools like SolarWinds, the priority is the dashboard’s health status. I learned that alerts, warnings, and “critical” red flags must be investigated immediately. In an infrastructure as large as ours, understanding the hierarchy of these alerts is key—prioritizing a core router failure over a single end-node issue is what keeps the port operational.

When working with Allot and NetXplorer, the guideline is centered on traffic intelligence. Users should regularly check application-level reports to identify abnormal spikes in bandwidth. This data isn't just for monitoring; it's for capacity planning. If the NetXplorer graphs show a consistent upward trend in traffic, it's a signal that we need to start planning for hardware upgrades or policy adjustments.

For the security layer, specifically F5 and Sophos, the guideline is to be "judicious." Any change to a firewall rule or a load-balancing policy can have massive ripple effects. I learned that before any policy is pushed, it must be documented and verified against the existing network map.

Finally, documentation in Microsoft Visio should be treated as a living document. A user guide for these systems is only useful if the Visio diagrams accurately represent the actual physical cabling and IP addressing of the site. I was taught that any time a cable is moved or a server is added, the Visio map must be updated immediately to ensure the next engineer on shift has the correct "source of truth."

5.4 Impact of the Internship

My internship at Nazabi Group was a defining chapter in my professional development. Working as a member of the Nazabi team under the guidance of Blue Solutions Ltd allowed me to contribute to projects that are vital to Bangladesh's digital future.

By assisting in network monitoring through SolarWinds, I played a part in maintaining the 24/7 availability required by the Chittagong Port Authority. Analyzing alerts and identifying traffic trends allowed me to report potential bottlenecks before they could escalate into service interruptions. This proactive mindset is something I will carry into every future role.

My experience with high-level tools like Allot, F5, and Sophos significantly deepened my understanding of how a modern IT firm balances performance with security. I learned that providing "internet" is easy, but providing a "secured, optimized, and scalable network" for a government entity requires a much higher level of technical discipline. This experience perfectly aligned with Nazabi's objective of delivering "Right-First-Time" infrastructure.

Additionally, my work on network architecture documentation using Microsoft Visio has left a lasting impact on the projects I touched. By creating clear, accurate

diagrams of the DOT and Port setups, I helped ensure that future troubleshooting and infrastructure expansions can be handled efficiently.

On a personal level, this internship has been a massive confidence booster. I moved from being a student who was intimidated by the Cisco CLI to a technician who can navigate complex server environments and security protocols. It has clarified my career path, giving me a solid foundation in network engineering and cybersecurity that I am eager to build upon in the professional world.

Chapter 6

Conclusion and Recommendation

This final chapter provides a summary of my internship experience with **Nazabi Group**, focusing on the technical insights gained through hands-on work with enterprise-grade infrastructure. It reflects on how the transition from academic theory to the “heavy lifting” of government-tender projects has shaped my professional perspective.

Additionally, this chapter addresses the practical challenges and constraints faced during the internship—specifically regarding the logistical and security-related aspects of working on national infrastructure. Finally, it offers constructive recommendations aimed at enhancing the learning experience for future engineering interns within the organization.

6.1 Conclusion

My time at **Nazabi Group** was a transformative period that effectively bridged the gap between my university textbooks and the realities of large-scale engineering. Working as part of a team that handles critical projects for the **Department of Telecommunications (DOT)** and the **Chittagong Port Authority** provided me with a high-pressure, high-reward environment. By being actively involved in the configuration of **Cisco routers**, the security layering of **HP servers**, and the traffic intelligence of **Allot and F5**, I gained a level of technical depth that simply cannot be replicated in a lab.

The internship forced me to think beyond just “making a connection work” and taught me how to make a connection secure, redundant, and optimized. Beyond

the hardware, I developed a strong professional foundation in technical documentation using **Microsoft Visio** and real-time monitoring through **SolarWinds**. More importantly, the experience sharpened my ability to troubleshoot under pressure and communicate effectively with senior engineers and stakeholders. Overall, this journey with Nazabi and **Blue Solutions Ltd** has not only solidified my knowledge of networking and cybersecurity but has also given me the confidence to pursue a career in the high-stakes world of national IT infrastructure.

6.2 Limitations

While the internship was an incredible learning opportunity, there were a few real-world hurdles that impacted the experience.

The most significant challenge was the logistical and physical demand of the role. Because the project sites, such as the **Chittagong Port**, are located far from the central office, I spent a massive amount of time traveling. Unlike permanent staff, interns did not have access to dedicated transportation facilities. This often meant leaving home in the very early hours of the morning and returning late at night. Maintaining high energy levels during intensive site visits after long commutes was a constant test of stamina.

Another limitation was the natural boundary between learning and "production." Due to the sensitive nature of government data and strict security protocols, I was not permitted to make live changes to the primary backbone configurations of the DOT or the Port systems. While I understood that these restrictions were necessary to prevent any risk of national-level downtime, it occasionally limited my ability to test out advanced "what-if" scenarios on live equipment.

6.3 Recommendations

Based on my experience, I believe the following adjustments would make the internship program at Nazabi even more effective:

- **Logistical Support:** The organization might consider providing limited transportation support or travel allowances for interns, especially during major site deployments like the Chittagong Port project. This would ensure interns remain focused and productive during physically demanding site visits.

- **Supervised Sandboxing:** It would be highly beneficial to set up a dedicated “Shadow Lab” using older or decommissioned Cisco and HP gear. This would allow interns to practice the high-level configurations they see senior engineers performing—such as F5 load balancing or complex firewall rules—in a safe environment that doesn’t risk live government services.
- **Structured Technical Briefs:** Short, weekly debriefs with senior engineers to discuss the “logic” behind specific site decisions (e.g., why a specific fiber path was chosen over another) would further bridge the gap between observation and deep understanding.

Appendix



Date: December 4, 2025

To
Fahim Sadik
44/t, Mitaly Road, Dhanmondi
8A, Dhaka-1205.
Cell: +8801890244471

Subject: **Appointment for Intern (IT & Networking)**

Dear Fahim Sadik,

With reference to your recent interview for above mentioned position, we are pleased to appoint you as Intern (IT & Networking) of our company on the following terms & conditions.

Job Title: Intern (IT & Networking)

Date of Joining: January 05, 2026

Apprenticeship allowance (Monthly): BDT 10,000 (Ten thousand taka only)

Job Location: Corporate Office, House- 38, Road- 02, Block- B, Niketon, Gulshan-01, Dhaka.

Working hours: Sunday to Thursday (10:00 AM to 06:00 PM)

Internship Period: 3 months. This can be reduced or extended subjective to your performance.

Bonus & Benefits: As per company policy. (No bonus, benefits & conveyance during internship period.)

We congratulate you on your appointment and wish you a long career with us. We assure you have a great journey and get our full support for professional growth and development.

Sincerely

Nasima Jahan B. Binti
Chairman and MD
Nazabi Group

NAZABI GROUP

Corporate Office: House- 38, Road- 02, Block- B, Niketon, Gulshan-01, Dhaka-1212
Registered Office: 43, Sher-E-Bangla Road, Hazaribagh, Dhaka-1209
Factory: Hamzarbagh, Hathazari Road, West Sholosohor Panchlaish, Chittagong
Phone: 01841-615168, +880 1302-743288
E-mail: nazabisales@gmail.com, info@nazabigroup.com, nazabigroup@gmail.com
Website: <https://www.nazabigroup.com>



Figure 6.1: Appointment Letter