

# CNET/SYS ADMIN FINAL PROJECT PHASE1

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- Due Oct 26 by 11:59pm
- Points 100
- Submitting a file upload
- Available Sep 14 at 12am - Oct 27 at 11:59pm

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## CNET/SYS ADMIN FINAL PROJECT PHASE1

### Project Overview

#### Objective

In this project, you will conduct in-depth research and interviews to gain a practical understanding of organizations establish, maintain, and secure their network and system infrastructures. The focus will be on both technical aspects, such as configurations and setups, and administrative policies that guide daily operations and long-term strategic planning. This hands-on experience will help you bridge academic knowledge with real-world applications, preparing you for a career in network and system administration.

#### Focus Areas

To ensure comprehensive coverage, your research should address the following key areas:

- **Core Features & Implementations:**
  - System and service configuration processes, including network setup and establishment.
  - Maintenance practices, such as health monitoring, troubleshooting (including common FAQs), and network performance management.
  - Infrastructure design, covering Network Address Translation (NAT) for public and private networks, internet active links with standby/backup links, and integration of on-premise Active Directory (AD) with Microsoft 365 AD.
- **Group Policies & Administrative Controls:**
  - Password policies, access control mechanisms, and network segmentation (e.g., employee vs. guest networks).
  - User account management, incident response, business continuity plans, backup strategies, and change management.

- System security measures, VPN and mobile worker technologies, and compliance with security standards.
- Key responsibilities of system administrators, including Group Policies management in on-premise and cloud environments.
- **Benefits & Purpose:**
  - Explore the benefits in terms of enhanced security, operational efficiency, regulatory compliance, and business resilience.
  - Identify challenges in balancing user accessibility with stringent security measures and regulatory requirements.

By incorporating these elements, you will collect valuable data that supports your future career in network and system administration, including practical insights into troubleshooting, performance optimization, and hybrid AD management.

## Task 1: Preparation

### 1. Define Research Goals & Scope

- **Identify Key Areas:**
  - **Core Operational Features:** Research general methods for configuring, establishing, and maintaining system environments and network infrastructures. This includes network setup processes, health monitoring tools, troubleshooting techniques (e.g., common issues and resolutions), NAT implementation for public/private networks, active/standby internet links for redundancy, and network performance management strategies.
  - **Group Policies:** Focus on how policies are formulated and enforced, such as:
    - Password Policy: Requirements for complexity, expiration, and secure storage.
    - Access Control: Management of user accounts, resource permissions, and role-based access.
    - Network Access: Segmentation strategies (e.g., dedicated employee SSID vs. guest SSID) for security.
    - Email & Internet Policies: Guidelines for usage, security protocols, and monitoring.
    - Incident Response & Business Continuity: Procedures for handling disruptions and ensuring uninterrupted operations.
    - Backup & Change Management Policies: Strategies for data backups, system updates, and controlled modifications.
    - System Security & VPN/Mobile Worker Technologies: Policies for secure remote access and communications.
    - System Administration Responsibilities: Key duties like managing on-premise AD, Microsoft 365 AD, and Group Policies.
- **Clarify Objectives:**
  - Learn key considerations for setting up new infrastructures, including long-term maintenance, scalability, security, and regulatory compliance.

- Understand how organizations blend daily operational practices with strategic policies to support efficient and secure IT environments.

## 2. Background Research

- Consult official resources, such as whitepapers, guidelines from bodies like ISO or NIST, and industry best practices. Focus on policy development, infrastructure setup (including NAT and AD management), operational maintenance, troubleshooting, performance management, and compliance.

## Task 2: Identifying & Contacting Professionals

### 1. Identify Potential Interviewees

- **Target Organizations:** Reach out to network/system administrators from reputable companies or organizations certified by international/national standards (e.g., ISO, national IT regulators).
- **Sources to Consider:** Use friends and family networks, professional meetups, door-to-door outreach, LinkedIn, or company websites.

### 2. Crafting Your Outreach Message

- **Introduction:** Clearly introduce yourself as a student conducting academic research. Briefly explain the project's aim: to explore how organizations implement, manage, and secure network/system infrastructures and policies.
- **Assurance on Confidentiality:** Stress that you're seeking general practices and non-sensitive information only—no proprietary data is needed.
- **Official Confirmation Requirement:** Explain that you'll need an official signed letter or confirmation email from a network/system administrator verifying their support. It must come from a company email or include verifiable contact details.
- **Politeness & Professionalism:** Keep your message concise, respectful, and flexible on scheduling to build positive rapport.

## Task 3: Developing the Interview/Survey Instrument

### 1. Creating an Interview Guide

Use this guide to structure your questions, allowing for natural flow while covering all topics:

- **Daily Operational Practices:**
  - How are your daily activities organized, and what routine tasks do you perform to maintain system reliability?
  - What are the key challenges in daily operations, and how do you address them?
  - Describe strategies for health monitoring, troubleshooting common issues (e.g., FAQs), and network performance management.
- **Infrastructure Setup Considerations:**
  - What factors are considered when establishing a new network or system infrastructure?

- How do you plan for scalability, security, future changes, NAT for public/private networks, and active/standby internet links?
- Explain integration of on-premise AD with Microsoft 365 AD.
- **Policy Formulation & Enforcement:**
  - How do you design and implement group policies, such as password rules, access controls, network segmentation (e.g., employee vs. guest), email/internet usage, user account management, incident response, business continuity, backups, change management, and remote access (VPN/mobile technologies)?
  - What are the key responsibilities of system administrators in managing Group Policies?
  - How do you enforce compliance with internal policies?
- **Compliance & Regulatory Considerations:**
  - How do international/national regulations shape your policies and operations?
  - What best practices ensure compliance with standards?
- **Future Challenges and Improvements:**
  - What advice do you have on emerging trends, challenges, or improvements in infrastructure maintenance and upgrades?

## Task 4: Conducting the Interviews/Surveys

### 1. Scheduling & Execution

- **Plan Interviews:** Schedule at convenient times using in-person meetings, virtual platforms, or phone calls. Always request permission to record.
- **During the Interview:** Start with a quick overview of your goals and confidentiality reminder. Follow the guide but adapt to the conversation. Take detailed notes and record (with permission) for accuracy.

### 2. Handling Sensitive Information

- **Respect Boundaries:** If details seem sensitive, shift to general practices.
- **Ethical Considerations:** Reaffirm you're not seeking internal documents or proprietary data. Anonymize any sensitive info in your report.

## Task 5: Data Analysis and Reporting

### 1. Analyzing Your Findings

- **Identify Common Themes:** Spot recurring strategies in setup, operations, policy enforcement, monitoring, troubleshooting, NAT, AD management, and performance.
- **Compare and Contrast:** Highlight differences between academic theories and real-world practices.
- **Highlight Practical Insights:** Note innovative approaches to policy enforcement, infrastructure management, and how regulations impact operations.

### 2. Preparing Your Final Deliverable

- **Written Report (Minimum 15 Pages):**
  - **Well-designed Cover page**
  - **Foreword and Abstract**
  - **Table of Contents**
  - **Introduction:** Outline objectives, scope, and methodology.
  - **Methodology:** Detail how you identified professionals, conducted interviews/surveys, and maintained confidentiality.
  - **Findings:** Organize into sections on infrastructure setup (including NAT, AD management), daily operations (monitoring, troubleshooting, performance), group policies (password, access, etc.), and compliance.
  - **Discussion:** Analyze alignments/deviations from theory, emphasizing regulatory impacts.
  - **Conclusion & Recommendations:** Summarize insights and suggest best practices for network/system management.

## Mandatory Official Confirmation

### Requirements

- Obtain an official signed letter or have a confirmation email sent to the Lecturer at [joshua.kayonga@auca.ac.rw](mailto:joshua.kayonga@auca.ac.rw) (<mailto:joshua.kayonga@auca.ac.rw>) (copy yourself). It must come from a network/system administrator at a certified company (e.g., ISO or national IT regulators).
- The confirmation must:
  - Use an official company email (e.g., [username@company.com](mailto:username@company.com) (<mailto:username@company.com>)) or include verified contacts.
  - State that the administrator reviewed your research and agrees with the general findings and methods.

### Expected Outcomes

- **Enhanced Practical Knowledge:** Deepen your understanding of real-world system configuration, setup, maintenance, monitoring, troubleshooting, AD management, and policy enforcement.
- **Critical Analysis Skills:** Learn to compare academic theories with industry practices.
- **Professional Communication:** Improve skills in approaching and interviewing professionals.
- **Compliance and Regulatory Awareness:** Grasp how legal frameworks influence operations and strategies.
- **Validated Research:** Back your work with official confirmations for credibility and relevance.

## PHASE 1 END.

## Appendices

### Template for Official Letter or Email

**Subject: Official Confirmation of [Student Name]'s Research Project**

Greetings, Dear Ins. Joshua IRADUKUNDA,

I am writing to confirm that I, [Administrator's Full Name], in my capacity as [Job Title] at [Company/Organization Name], have reviewed and supported the research conducted by [Student Name] as part of their academic project. The purpose of this research was to investigate practices related to network and system administration, including but not limited to:

- **Infrastructure Setup and Daily Operations:** General approaches to designing, establishing, and maintaining network and system infrastructures, including NAT, active/standby links, health monitoring, troubleshooting, and performance management.
- **Policy Formulation and Implementation:** Strategies for developing and enforcing group policies such as password policies, access control, network segmentation (e.g., employee vs. guest), email/internet usage, user account management, incident response, business continuity, backup policies, change management, system security measures, and Group Policies in AD environments.
- **Compliance and Regulatory Considerations:** How compliance with international/national standards (e.g., ISO or IT regulators) impacts operations and policy enforcement.
- **Maintenance and Future Planning:** Considerations for new infrastructures, ongoing maintenance (including AD management), recommendations for improvements, and potential challenges.

During our discussions/interviews on [Date(s)], I provided detailed insights into our daily practices, infrastructure establishment factors, and alignment with compliance standards.

#### Feedback and Recommendations:

- **Feedback:** I found that [Student Name] has successfully captured the essential elements of our methodologies, challenges, and benefits in implementing and maintaining robust infrastructures.
- **Recommendations:** Based on our conversation, I recommend that [Student Name] further explore [specific suggestion]. These insights can serve as a reference for emerging trends in network and system administration.

Please consider this email/letter as an official endorsement. Contact me at [Administrator's Email Address] or [Phone Number] for further information.

Thank you.

Sincerely, [Administrator's Full Name] [Job Title] [Company/Organization Name] [Company Address]  
[Company Email Address] [Phone Number] [Digital Signature (if applicable)]

## Network/System Administration Research Survey (Template)

Interview/Survey Date: \_\_\_\_\_ Interviewee Name: \_\_\_\_\_

Job Title: \_\_\_\_\_

Company/Organization: \_\_\_\_\_ Contact Information: \_\_\_\_\_

## Section 1: Introduction

**Purpose of Interview/Survey:** I am conducting academic research on general practices in designing, implementing, and maintaining network and system infrastructures. This aims to understand features, policy frameworks, and operational practices supporting IT environments.

**Confidentiality Assurance:** Responses are for academic use only and will be anonymized. Sensitive/proprietary details will be excluded.

## Section 2: Daily Operational Practices

### 1. Daily Activities:

- Describe key daily activities to maintain your organization's network and system infrastructure.
- What routine tasks ensure system reliability?

### 2. Challenges:

- What common challenges do you face in day-to-day operations?
- How do you address them?

### 3. Maintenance & Monitoring:

- What strategies do you use for continuous monitoring, health checks, troubleshooting (e.g., common FAQs), and network performance management?
- How do you prioritize tasks during routine maintenance?

## Section 3: Infrastructure Setup and Implementation

### 4. Planning and Setup:

- When setting up new infrastructure, what primary factors do you consider (e.g., NAT for public/private networks, active/standby internet links)?
- How do you plan for scalability, security, and future growth?

### 5. Integration of Systems:

- How do you ensure systems and services integrate seamlessly (e.g., on-premise AD with Microsoft 365 AD)?
- What processes are in place for integration and testing before launch?

## Section 4: Policy Formulation and Enforcement

### 6. General Policy Frameworks:

- What key policies guide your IT infrastructure (e.g., user account management, access control, change management, Group Policies)?

### 7. Specific Policy Areas:

- **Password Policy:** How do you establish/enforce guidelines for complexity, expiration, and storage?
- **Access Control:** What approaches manage access to resources?
- **Network Access:** How do you segment/manage access for user groups (e.g., employees vs. guests)?

- **Email & Internet Policies:** What guidelines cover usage and access?
- **User Account Management:** How do you manage accounts and permissions? What methods monitor/adjust access?
- **Incident Response & Business Continuity:** What procedures handle incidents? How is continuity maintained?
- **Backup & Change Management:** Describe backup approaches. How do you manage changes to minimize risk?
- **Remote Access and Mobile Worker Support:** What strategies support secure remote access (VPN/mobile)? How do they comply with policies?
- **System Administration Responsibilities:** What are your key duties in managing AD (on-premise/Microsoft 365) and Group Policies?

## Section 5: Compliance and Future Considerations

### 12. Compliance with Standards:

- How do international/national standards (e.g., certifications, regulators) influence policies and practices?
- What challenges arise in maintaining compliance?

### 13. Feedback on Practices:

- What feedback/recommendations do you offer for managing infrastructures?
- What emerging trends/challenges should new professionals consider?

### 14. Suggestions for Improvement:

- What improvements/innovations could benefit your practices?

## Section 6: Additional Comments

### 15. Open Comments: Share any additional insights on your organization's practices.

**Declaration I,** \_\_\_\_\_ (Name of Interviewee), confirm the information is accurate and reflects general practices.

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

### Instructions for Students:

- Share this form beforehand to ensure comfort.
- Collect the official confirmation as part of submission.