CNT3004: Computer Network Concepts

Homework 5 & 6

(100 pts total) Answer each of the following questions and/or complete the required task. You will be installing some software on your system, but it is safe. Put ALL your answers into 1 file (word, or pdf).

(20 pts) Identify and define the following 5 security certifications (you will need to use the Internet):

CERTIFICATION	WHAT IT STANDS FOR	BRIEF DESCRIPTION	WHO DEVELOPED AND/OR MANAGES
CEH	Certified Ethical Hacker	A credential that validates a professional's ability to assess the security of systems by looking for weaknesses and vulnerabilities using the same knowledge and tools as malicious hackers, but lawfully and legitimately.	EC-Council (International Council of E-Commerce Consultants)
CISM	Certified Information Security Manager	Focuses on managing and overseeing an enterprise's information security program. It emphasizes risk management, governance, incident management, and program development rather than hands-on technical skills.	ISACA (Information Systems Audit and Control Association)
SECURITY+	CompTIA Security+	A vendor-neutral entry-level security certification covering core security functions including network security, threats/attacks, cryptography, identity management, and risk management. Widely recognized as a baseline for IT security roles.	CompTIA (Computing Technology Industry Association)
CISSP	Certified Information Systems Security Professional	An advanced, vendor-neutral certification for experienced security practitioners. Covers eight domains including security and risk management, asset security, cryptography, and software development security. Considered a gold standard in the industry.	ISC² (International Information System Security Certification Consortium)
CISA	Certified Information Systems Auditor	Designed for professionals who audit, control, monitor, and assess information systems. It validates skills in IS audit, control, governance, and security — widely used in IT audit and compliance roles.	ISACA (Information Systems Audit and Control Association)

(20 pts) List and define the following 5 Network Risk Management Software Products (use the Internet to find answers):

RISK MANAGEMENT SOFTWARE	BRIEF DESCRIPTION (WHAT IT DOES / HOW IT WORKS)	WHO DEVELOPED AND/OR MANAGES
LogicGate Risk Cloud	A cloud-based GRC (Governance, Risk, and Compliance) platform that uses a flexible, no-code workflow builder to help organizations identify, assess, and manage enterprise risk. It connects risk data across departments and automates compliance workflows with real-time dashboards and reporting.	LogicGate (founded 2015, headquartered in Chicago, IL)
SecurityScorecard	Continuously monitors and scores the cybersecurity posture of organizations across ten risk categories (network security, DNS health, patching cadence, etc.) on a 0–100 scale. Used for third-party vendor risk management, portfolio monitoring, and cyber insurance underwriting.	SecurityScorecard, Inc. (founded 2013, headquartered in New York, NY)
Fastpath Assure	A cloud-based access risk management and segregation of duties (SoD) solution. It analyzes user access rights within ERP systems (SAP, Oracle, NetSuite, Dynamics 365) to detect SoD conflicts and toxic access combinations, streamlining audit and compliance processes.	Fastpath (founded 2012; acquired by Syncari in 2022, now operating under Fastpath brand)
SAI360	An integrated GRC platform combining ethics & compliance management, risk management, policy management, and learning management into one suite. It uses AI-assisted risk scoring, automated workflows, and pre-built regulatory content to streamline enterprise risk programs.	SAI360 (formerly SAI Global's compliance and risk division; rebranded 2020, headquartered in Chicago, IL)
SureCloud	A cloud-native GRC and cybersecurity platform offering risk management, compliance management, vulnerability management, and penetration testing services. It consolidates risk data into a single platform with drag-and-drop workflow configuration and out-of-the-box regulatory frameworks (ISO 27001, NIST, GDPR, etc.).	SureCloud (founded 2007, headquartered in London, UK; offices in the US)

(20 pts) Identify the following 5 WAN technologies.

WAN TECHNOLOGY	DESCRIPTION	HOW IS IT USED
ATM	Asynchronous Transfer Mode — a cell-switching network technology that transmits data in fixed-size 53-byte cells. Supports voice, video, and data on the same network with quality-of-service (QoS) guarantees.	Primarily used by telecommunications carriers for backbone infrastructure and DSL (via ATM-over-DSL). Each cell has a 5-byte header (routing info) and 48-byte payload, allowing predictable latency for real-time traffic like VoIP.
FRAME RELAY	A packet-switched WAN protocol that operates at Layer 2 (Data Link). Uses virtual circuits (PVCs/SVCs) to connect multiple sites over a shared carrier network, identified by DLCIs (Data Link Connection Identifiers).	Largely replaced by MPLS and broadband, but was widely used to connect branch offices to corporate headquarters. Carriers provided a 'cloud' of Frame Relay switches; customers paid for a Committed Information Rate (CIR) and burst capacity.
SONET	Synchronous Optical Network — a standardized protocol for transmitting multiple data streams simultaneously over optical fiber. Defines optical carrier	Used as the backbone technology for telephone company networks and large ISPs. SONET rings provide automatic failover (healing) in under 50ms.

WAN TECHNOLOGY	DESCRIPTION	HOW IS IT USED
	(OC) levels (e.g., OC-3 = 155.52 Mbps, OC-192 = 9.953 Gbps).	Data is framed into Synchronous Transport Signals (STS) for multiplexing across fiber infrastructure.
MPLS	Multiprotocol Label Switching — a routing technique that forwards data based on short fixed-length labels rather than long network addresses. Operates between Layer 2 and Layer 3 (sometimes called 'Layer 2.5').	Enterprise WANs use MPLS for predictable performance and QoS. Labels are assigned at ingress nodes and stripped at egress, creating Label-Switched Paths (LSPs). Traffic engineering allows carriers to route packets around congestion and support VPNs (MPLS L3VPN / L2VPN).
SATELLITE	WAN connectivity delivered via geostationary (GEO), medium-earth orbit (MEO), or low-earth orbit (LEO) satellites. Bandwidth is shared over a radio frequency link between a dish at the customer site and the satellite.	Used in remote/rural areas where terrestrial infrastructure is unavailable (oil platforms, ships, aircraft, military). GEO satellites introduce ~600ms round-trip latency; LEO constellations (e.g., Starlink) reduce latency to 20–60ms. Common protocols include DVB-S2 for downlink and DVB-RCS2 for return channel.

(40 pts) You will be running programs on your Windows Machine (if you have a Mac you will need to dual boot Windows on your machine if you have not done so already or use the MAC tools that are similar, go to https://support.apple.com/guide/activity-monitor/welcome/mac).

Type MMC in the search field (left bottom of screen).

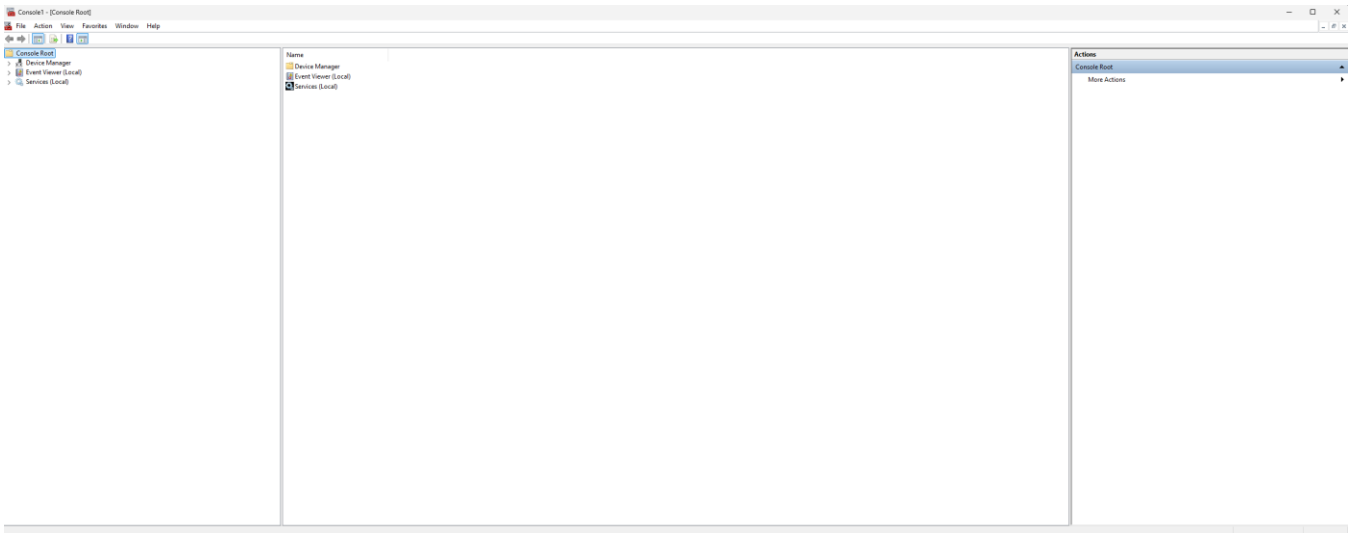
The Microsoft Management Console will appear named Console1 in the upper left of the window.

Click on File and then Add/Remove Snap In.

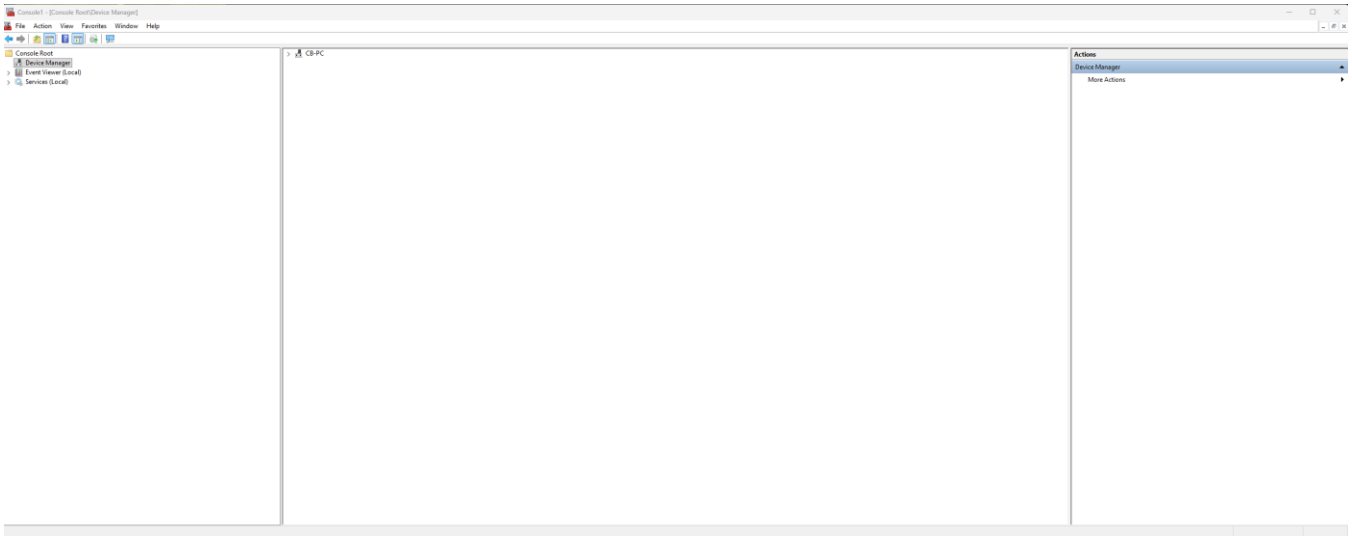
Add the following Snap-in(s):

- Device Manager
- Event Viewer (for the local computer)
- Services (for the local computer)

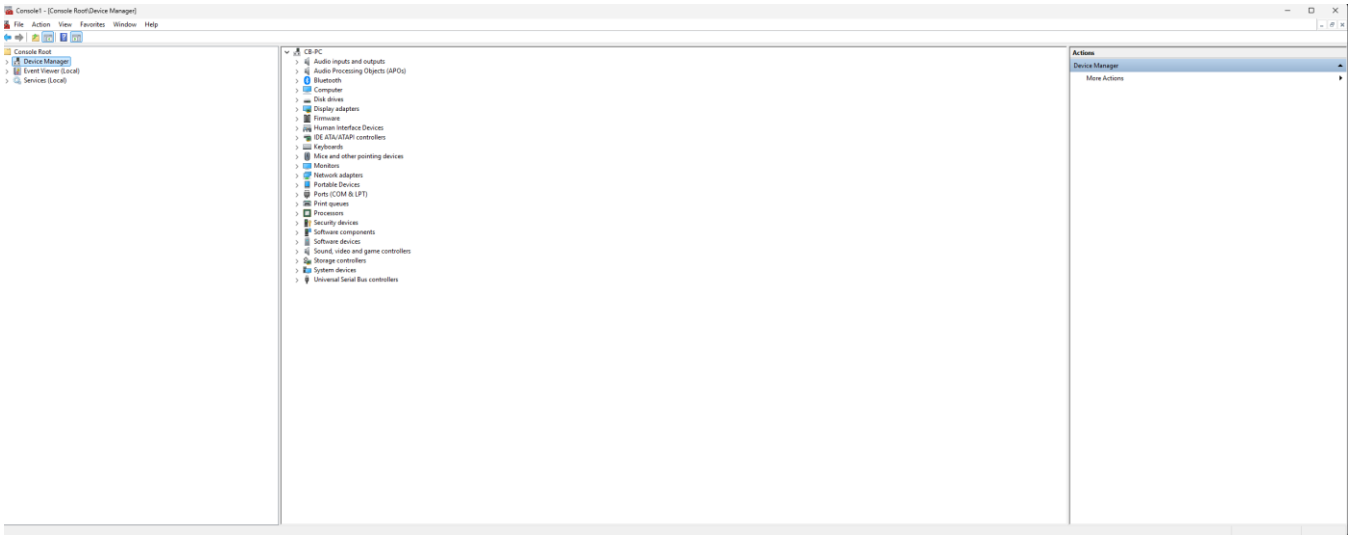
Then click on OK. All three tools will be showing. Take a screen shot showing that they are all in the MMC.



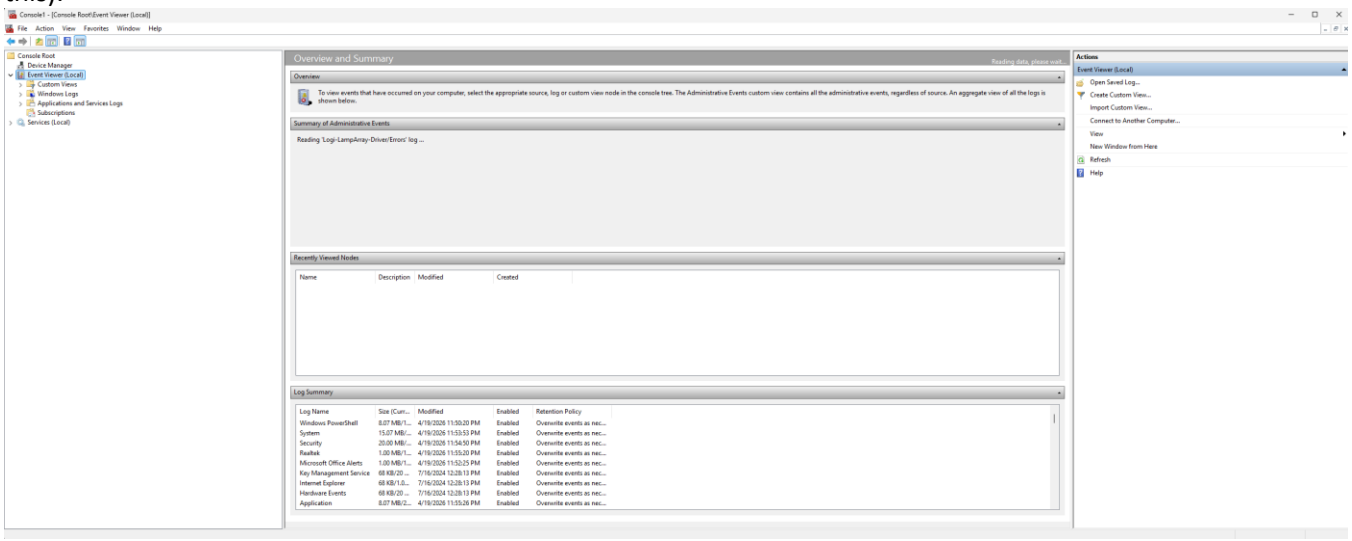
Next, click on Device Manager and a list of devices will show. Take a screen shot of this.



Click on Computer icon and then the computer name listed. You should get another window with the tabs: General, Driver, Details and Events. Take a screen shot of this.

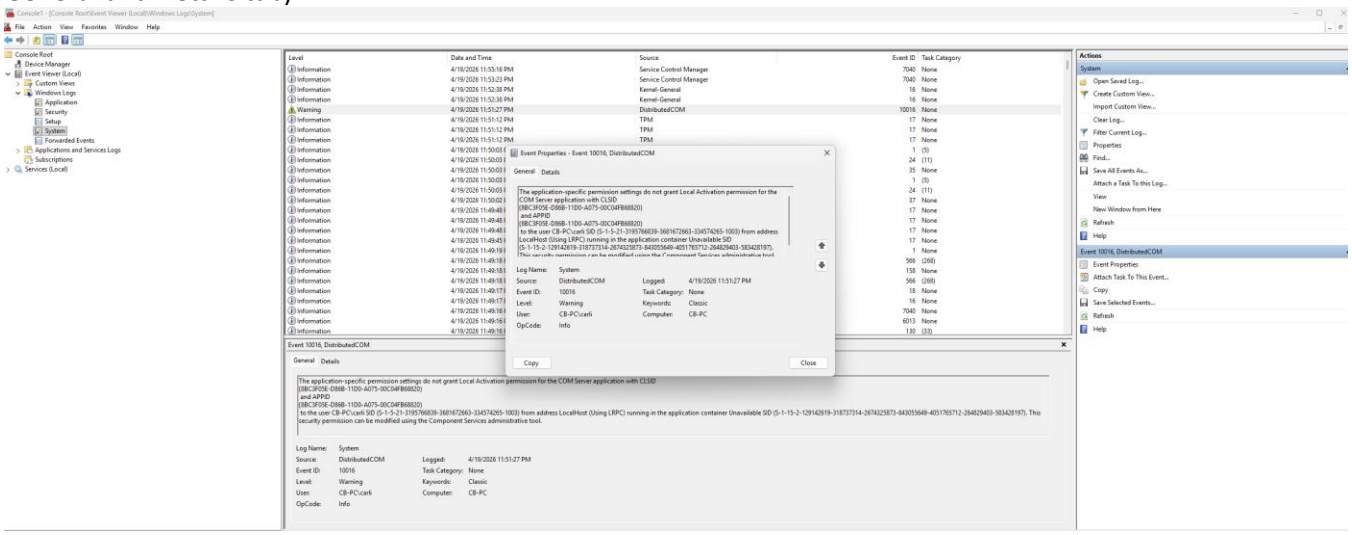


Next, click on Event Viewer (Local) – you should see an Overview and Summary window (take a screen shot of this).



Click on the System log in the Windows Logs folder. There are Levels of errors. What are they? **Critical**, **Error**, **Warning**, **Information**, **Verbose**

Click on one of the items in the System Log file and take a screen shot (it should open a new window with the General and Details tab).



Lastly, click on Services (Local) and take a screen shot of the window (should show the Name of the services on your system). You can click on ANY of the services to get a more detailed explanation. Click on one of these processes and take a screen shot.