

SEMtech!

Student Engagement & Mentoring in Technology

Understanding the Web Layers

Thomas Holt Russell, M.Ed., D. hon (Cybersecurity)

Purpose of this Presentation



Define the three main layers of the internet



Explore their characteristics and uses



Discuss ethical and cybersecurity considerations

Surface Web – Definition & Key Features

Definition:

The portion of the internet freely available and indexed by search engines.

Key Characteristics:

- Publicly accessible
- No login required
- Indexed by Google, Bing, etc.

Examples:

- Public blogs
- News websites
- Public social media profiles

Surface Web – Use Cases



General research



News consumption



Public communication



Educational browsing

Deep Web – Definition & Characteristics

Definition:

Internet content not indexed by search engines and requiring credentials.

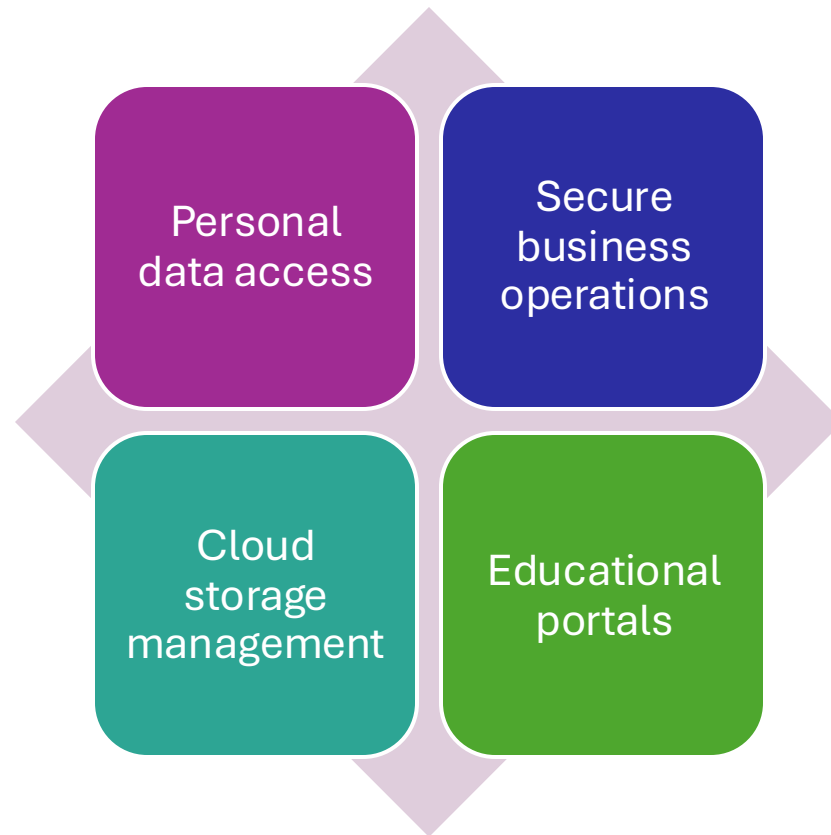
Key Characteristics:

- Login required
- Protected by passwords or session IDs
- Behind authentication walls

Examples:

- Banking portals
- Email inboxes
- Private social media messages

Deep Web – Use Cases



Dark Web – Definition & Tools

Definition:

A subset of the Deep Web requiring special tools (e.g., Tor) for access and anonymity.

Access Tools:

- Tor (The Onion Router)
- .onion domain URLs

Key Concepts:

- Not indexed by search engines
- Uses encryption and relays to anonymize traffic

Dark Web – Use Cases & Ethics

Legitimate Uses:

- Anonymous communication
- Whistleblowing
- Political activism under censorship

Illegitimate Uses (to be avoided):

- Illegal markets
- Hacking services
- Data trafficking

Key Terms & Definitions

Term	Definition
Surface Web	Public, indexable content
Deep Web	Behind authentication, not indexed
Dark Web	Encrypted, anonymous network via Tor
Tor	A network that anonymizes internet traffic
Onion	Special domain for Tor network
Encryption	Technique for securing digital communications
Relays	Nodes used to route and anonymize Tor traffic

Study Tips

01

Compare Surface,
Deep, and Dark
Web examples

02

Explain Tor in
simple terms

03

Review privacy and
ethical
considerations

04

Link to
cybersecurity
principles: **Privacy,**
Anonymity, Data
Protection

Closing Thoughts

The internet is layered,
not all parts are the same

Responsible use is
crucial

Ethical behavior and
cybersecurity awareness
go hand-in-hand