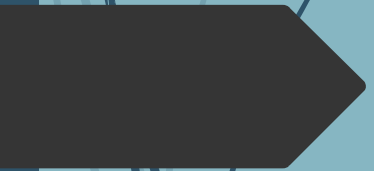


CYBER SECURITY FUNDAMENTALS





WHAT TO EXPECT??

<Hacking>



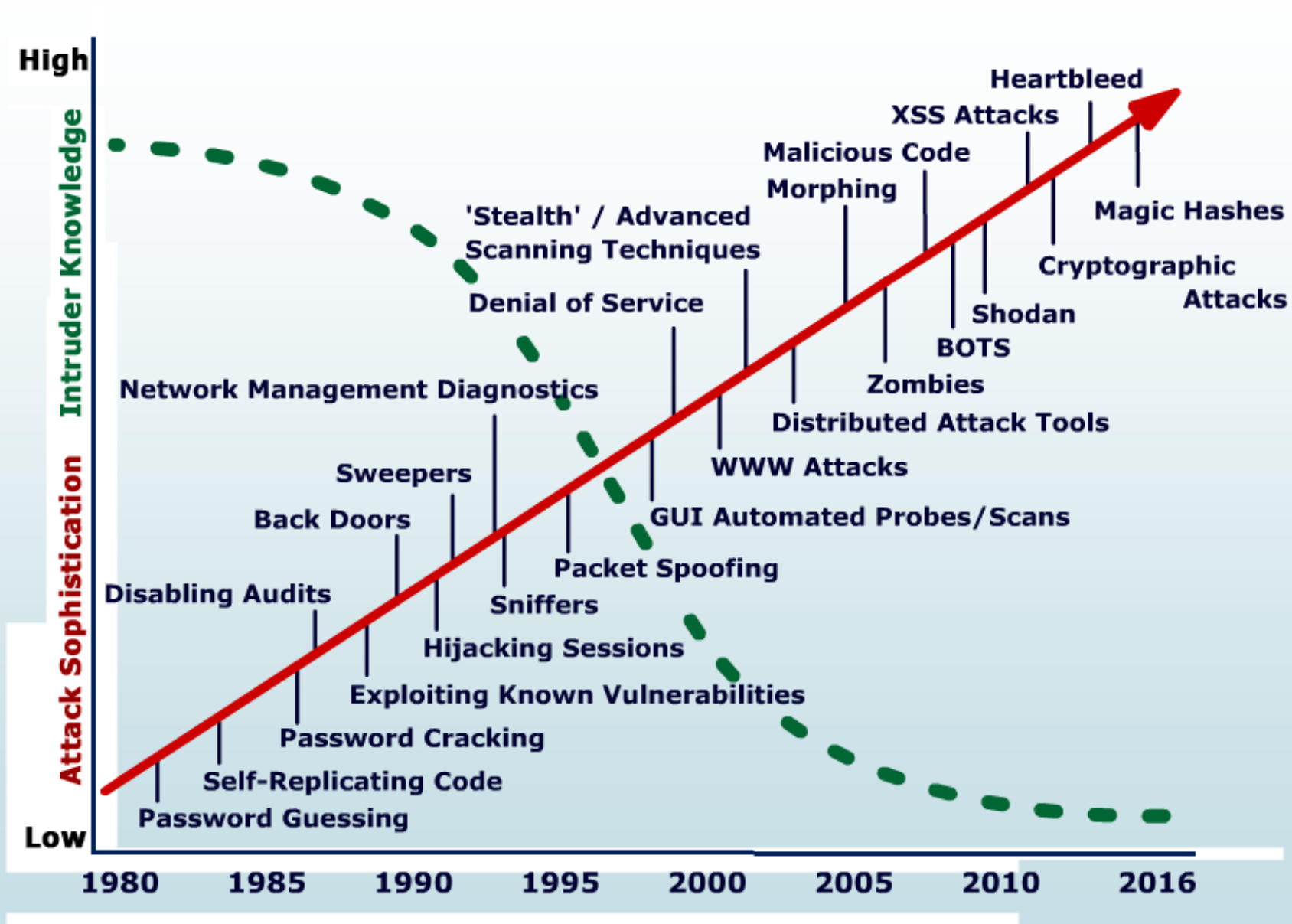
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NEED OF SECURITY

- Increasing awareness of technology but not Security
- Continuous Development & Competition in IT
- Increasing number of Cyber Criminals
- Increasing use of Network elements & applications
- Decreasing level of skill set





NEED OF SECURITY

- Any Security breach in the website of any person increases the risk of the public image
- Any Security breach in the website of any company increases the risk of company reputation
- Any Security breach in the government website may increase the risk on project management and government operations
- Any Security breach in the Military sector may jeopardise the safety of any country



What is HACKING??

- Hacking is an art of exploring various security breaches
- What people believe: It's an anti-social activity
 - : All the hackers are bad people
- The terms Hacker and Hacking are being misinterpreted and misunderstood with negative sidelines



COMMUNITIES OF HACKERS

- Hackers
- Crackers
- Phreaks
- Script Kiddies



TYPES OF HACKERS

- **White Hat Hacker** - They use their knowledge and skill set for good constructive intents. They find out new security loopholes and their solutions
- **Black Hat Hacker** - They use their knowledge and skill set for illegal activities and destructive intents
- **Grey Hat Hacker** – They use their knowledge and skill set for legal and illegal purpose. They are white hats in public but internally they do some black hat work



HACKING STRATEGY

- Reconnaissance (Information Gathering)
- Scanning
- Gaining Access
- Maintaining Access
- Covering Tracks



Cyber Crime is no more FUN...!!!

- Cyber crime controlled by IT ACT 2008 and respective IPC (constantly evolving)
- Complete control of Govt agencies over information stored, processed and transmitted over internet
- Upgradation of Investigating agencies with latest technology
- Service providers like ISPs, email service providers, etc are liable to share information with Govt agencies
- Upgradation of Forensic labs
- Stringent punishment for cyber crimes



Common Scenarios - Cyber Pornography

- Cyber pornography covers pornographic websites, pornographic magazines produced using computers and the Internet.
- Whoever publishes or transmits or causes to be published in the electronic form, any material which is obscene in nature falls under cyber pornography
- **Section 67:** Punishment for publishing or transmitting obscene material in electronic form
- **Punishment** – Imprisonment from 2 – 10 years with fine upto 10 lakhs



Common Scenarios – Identity Theft

- Identity theft is a term used to refer to fraud that involves stealing money or getting other benefits by pretending to be someone else.

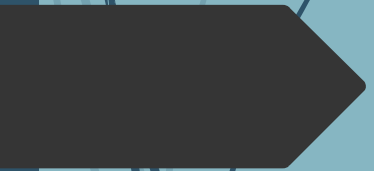
- **Section 66C Punishment for identity theft.**

Whoever, fraudulently or dishonestly make use of the electronic signature, password or any other unique identification feature of any other person, shall be punished with imprisonment of either description for a term which may extend to three years and shall also be liable to fine which may extend to rupees one lakh.

- **Section 66D Punishment for cheating by personation by using computer resource**

Whoever, by means of any communication device or computer resource cheats by personation, shall be punished with imprisonment of either description for a term which may extend to three years and shall also be liable to fine which may extend to one lakh rupees.

NETWORKING FUNDAMENTALS





TYPES OF NETWORK

- **LAN** – Local Area Network

LAN can establish the communication within a lab or within a building
e.g.-Office, Schools, etc

- **MAN** – Metropolitan Area Network

MAN can establish the communication between two or more LANs
e.g.-Radio, ATM, Metro, etc

- **WAN** – Wide Area Network

WAN can establish the communication globally
e.g.-VSAT, Telecom Networks, Internet, etc



IP ADDRESS

IP Address is also known as,

- Logical Address, or
- Unique Identity Address

It is used to identify the systems. Whenever any computer connects itself with the internet or with LAN, it gets one IP address, that IP address is always unique in the network. This means, once an IP address is assigned to any system in the network, it cannot be assigned to any other system. The same in the internet, if one IP address has been assigned to one system, it cannot be assigned to anyone else



IP VERSION

- **IPv4** - Internet Protocol Version -4

IPv4 is a 32 bit addressing protocol. The range of this IP starts from 0.0.0.0 to 255.255.255.255

i.e. – 192.168.1.24

- **IPv6** – Internet Protocol Version-6

IPv6 is a 128 bit addressing protocol. IPv6 addresses are written in eight groups of four hexadecimal digits separated by colons.

i.e. - 2001:0db8:85a3:0000:0000:8a2e:0370:7334



IP TYPES

- **Internal IP** - Whenever a computer connects itself with an Internal Network (LAN) , it gets an Internal IP. This IP will be the identity of the particular computer in the network
- **External IP** - Whenever a computer connects itself with the internet , it gets an IP address by ISP. This IP will be the identity of the particular computer over the internet.

IP TYPES

Both the Internal & External IP address can be allocated in two forms.

- **Static IP Address** - Static IP Address remains same in all the sessions.

Time	IP Address
10:00 - 12:00	192.168.1.4
13:00 - 15:00	192.168.1.4
15:00 - 20:00	192.168.1.4
22:00 - 01:00	192.168.1.4

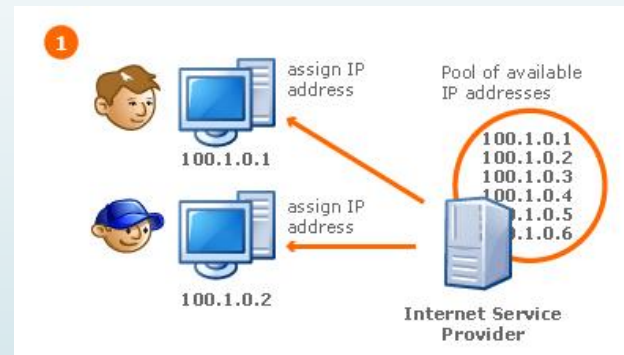
- **Dynamic IP Address** - Dynamic IP Address keeps changing in all the sessions.

Time	IP Address
10:00 - 12:00	192.168.1.4
13:00 - 15:00	192.168.1.14
15:00 - 20:00	192.168.1.34
22:00 - 01:00	192.168.1.41

ISP & IANA

ISP is an Internet Service Provider. All the internet users get the IP Address from the ISP.

- According to the client request, ISP assigns them Static or Dynamic IP



IANA manages global IP ranges space.

- IANA works in co-operation with five Regional Internet Registries (RIRs) to allocate IP address blocks to Local Internet Registries (Internet Service Providers) and other entities