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Something about Computer Networks

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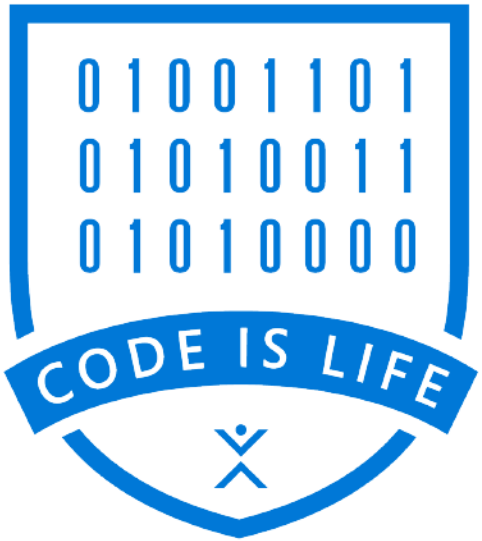

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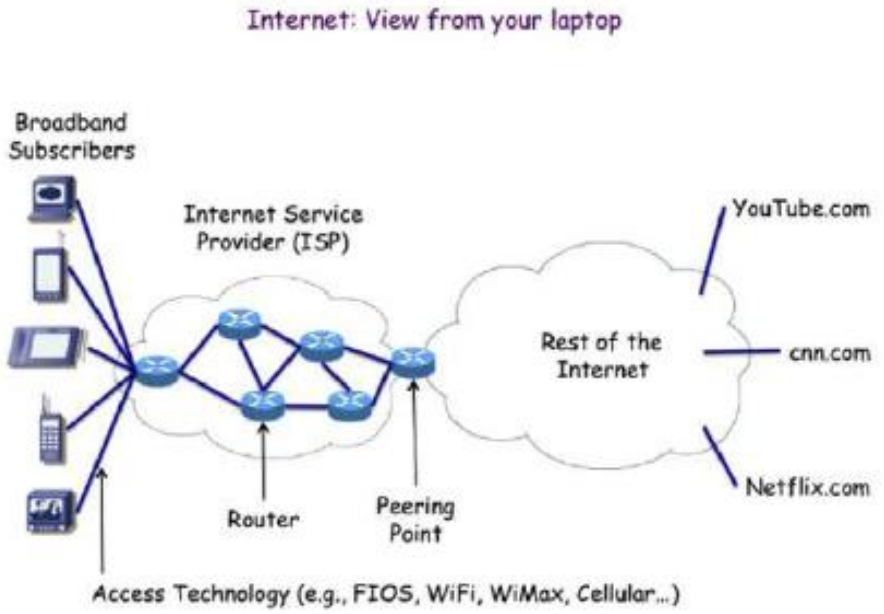
Disclaimer

- The presentation might contain topics which might be out of syllabus
- Please do not get scared and do not hesitate to ask any questions

WELL HOW MUCH DO YOU ABOUT NETWORKS ?



How do you connect to Internet ?

- Wi-fi ? (802.11ac)
- Ethernet ? (LAN)
- Jio ? (4G LTE)
- College network ?

What are MAC addresses ? IP addresses ? and port addresses ?

- MAC : Media Access Control [Physical Address]
- IP Address [Logical Address]
- Port Address [Application specific Address]

PING

- **Ping** is a computer network administration software **utility** used to test the reachability of a host on an Internet Protocol (IP) network. It measures the round-trip time for messages sent from the originating host to a destination computer that are echoed back to the source.

TRACERT

- **Traceroute** is a command which can show you the path a packet of information takes from your computer to one you specify. It will list all the routers it passes through until it reaches its destination, or fails to and is discarded. In addition to this, it will tell you how long each 'hop' from router to router takes.

NSLOOKUP

- **nslookup** is a network administration command-line tool available for many computer operating systems for querying the Domain Name System to obtain domain name or IP address mapping or for any other specific DNS record

Wireshark – Packet Analyzer Tool

Network Protocol Analyzer

Version 2.6.2 (v2.6.2-0-g1b3cedbc)

Copyright 1998-2018 Gerald Combs <gerald@wireshark.org> and contributors. License GPLv2+: GNU GPL version 2 or later <http://www.gnu.org/licenses/old-licenses/gpl-2.0.html> This is free software; see the source for copying conditions. There is NO warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

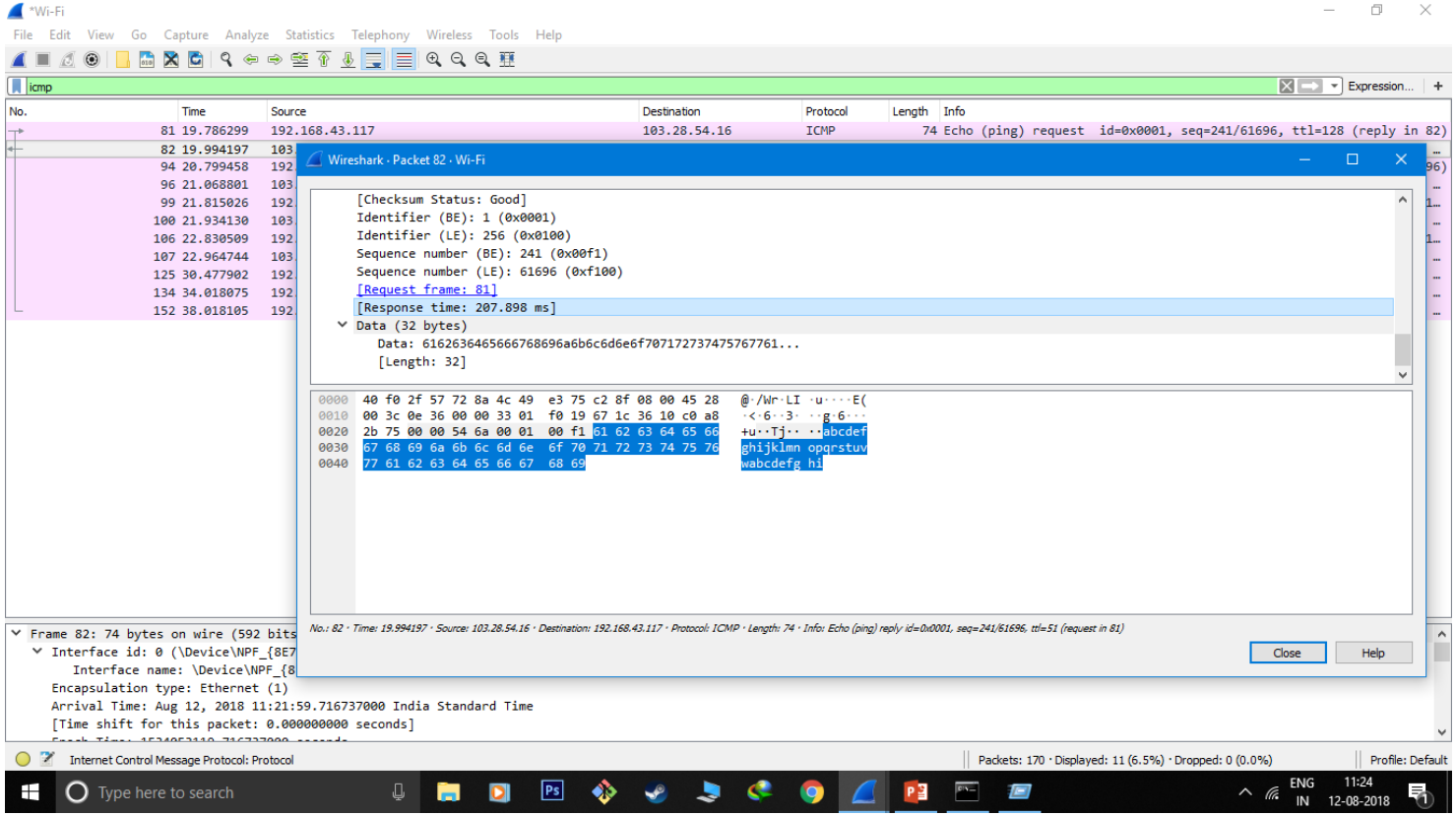
Compiled (64-bit) with Qt 5.9.5, with WinPcap (4_1_3), with GLib 2.42.0, with zlib 1.2.11, with SMI 0.4.8, with c-ares 1.14.0, with Lua 5.2.4, with GnuTLS 3.4.11, with Gcrypt 1.7.6, with MIT Kerberos, with MaxMind DB resolver, with nghttp2 1.14.0, with LZ4, with Snappy, with libxml2 2.9.4, with QtMultimedia, with AirPcap, with SBC, with SpanDSP, with bcg729.

Running on 64-bit Windows 10, build 17134, with Intel(R) Core(TM) i5-4200M CPU @ 2.50GHz (with SSE4.2), with 8104 MB of physical memory, with locale English_India.1252, with WinPcap version 4.1.3 (packet.dll version 4.1.0.2980), based on libpcap version 1.0 branch 1_0_rel0b (20091008), with GnuTLS 3.4.11, with Gcrypt 1.7.6, without AirPcap, binary plugins supported (14 loaded). Built using Microsoft Visual C++ 14.12 build 25835

Wireshark is Open Source Software released under the GNU General Public License.

Check the man page and http://www.wireshark.org for more information.

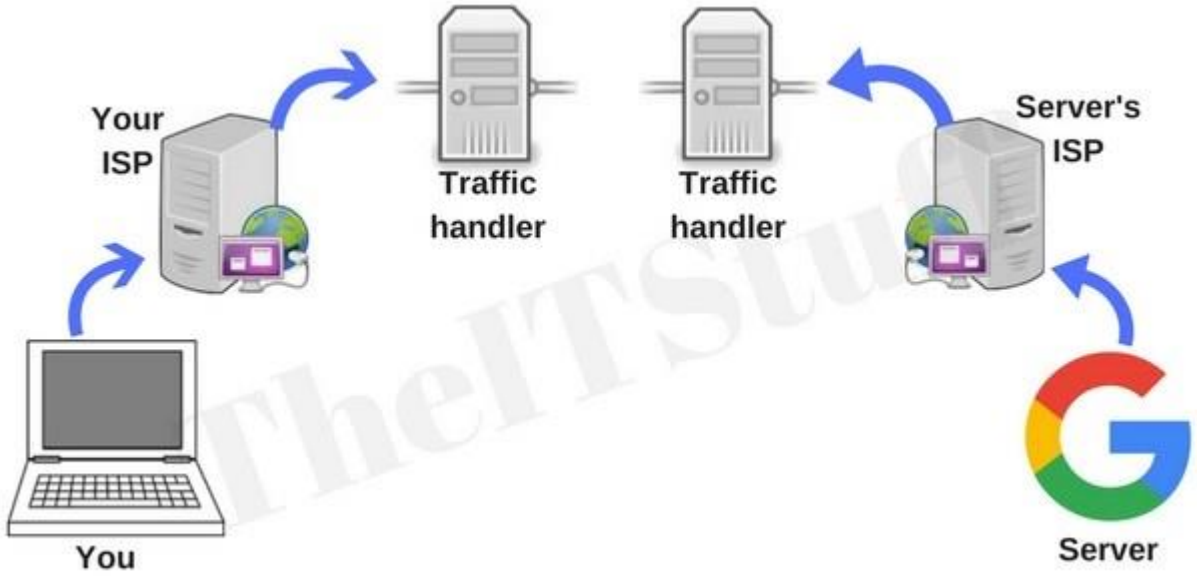
PACKET INFO


*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
icmp
Expression...
No. Time Source Destination Protocol Length Info
81 19.786299 192.168.43.117 103.28.54.16 ICMP 74 Echo (ping) request id=0x0001, seq=241/61696, ttl=128 (reply in 82)
82 19.994197 103
94 20.799458 192
96 21.068801 103
99 21.815026 192
100 21.934130 103
106 22.830509 192
107 22.964744 103
125 30.477902 192
134 34.018075 192
152 38.018105 192
Wireshark · Packet 82 · Wi-Fi
[Checksum Status: Good]
Identifier (BE): 1 (0x0001)
Identifier (LE): 256 (0x0100)
Sequence number (BE): 241 (0x00f1)
Sequence number (LE): 61696 (0xf100)
[Request frame: 81]
[Response time: 207.898 ms]
Data (32 bytes)
Data: 6162636465666768696a6b6c6d6e6f707172737475767761...
[Length: 32]
0000 40 f0 2f 57 72 8a 4c 49 e3 75 c2 8f 08 00 45 28 @·/Wr·LI ·u····E(
0010 00 3c 0e 36 00 00 33 01 f0 19 67 1c 36 10 c0 a8 ·<·6··3· ··g·6···
0020 2b 75 00 00 54 6a 00 01 00 f1 61 62 63 64 65 66 +u··Tj·· ··abcdef
0030 67 68 69 6a 6b 6c 6d 6e 6f 70 71 72 73 74 75 76 ghijklmn opqrstuv
0040 77 61 62 63 64 65 66 67 68 69 wabcdefg hi
No.: 82 · Time: 19.994197 · Source: 103.28.54.16 · Destination: 192.168.43.117 · Protocol: ICMP · Length: 74 · Info: Echo (ping) reply id=0x0001, seq=241/61696, ttl=51 (request in 81)
Close
Help
Frame 82: 74 bytes on wire (592 bits
Interface id: 0 (\Device\NPF_{8E7
Interface name: \Device\NPF_{8
Encapsulation type: Ethernet (1)
Arrival Time: Aug 12, 2018 11:21:59.716737000 India Standard Time
[Time shift for this packet: 0.000000000 seconds]
Internet Control Message Protocol: Protocol
Packets: 170 · Displayed: 11 (6.5%) · Dropped: 0 (0.0%)
Profile: Default
Type here to search
ENG
IN
11:24
12-08-2018

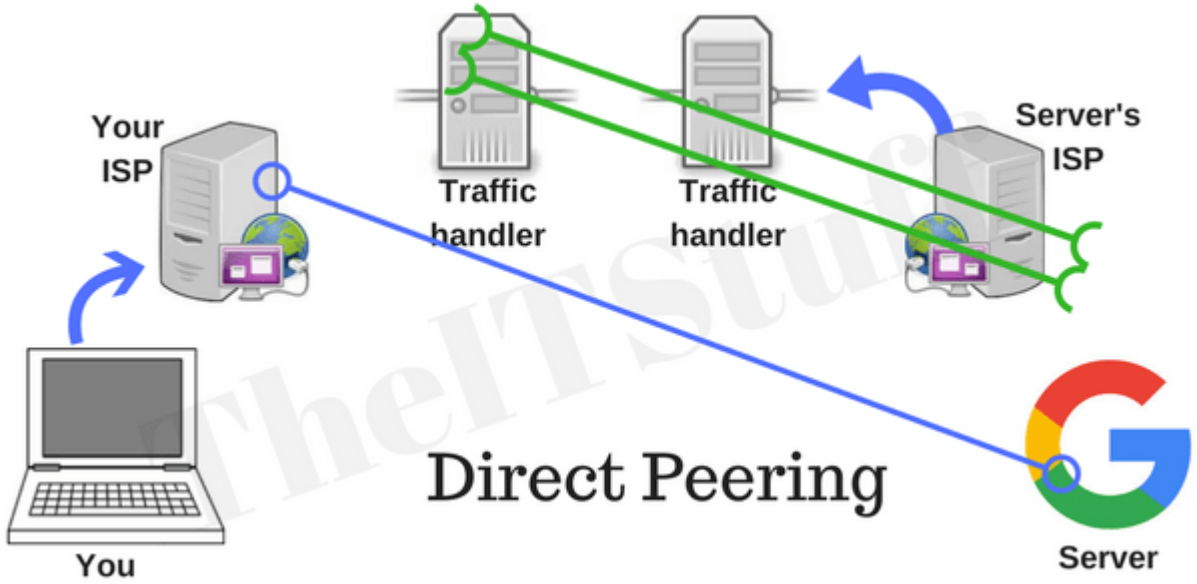
WHAT IS PEERING ?

- **Peering** is a process by which two Internet **networks** connect and exchange traffic. It allows them to directly hand off traffic between each other's customers, without having to pay a third party to carry that traffic across the Internet for them.

EXAMPLE OF NON PEERED NETWORK



EXAMPLE OF PEERING



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