

Computer Networks

Peeking inside the Network with Traceroute



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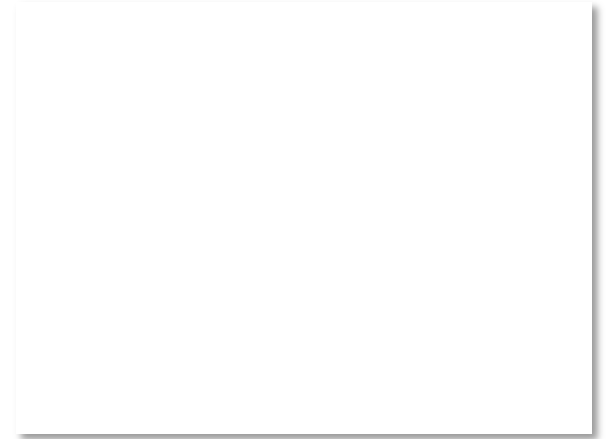
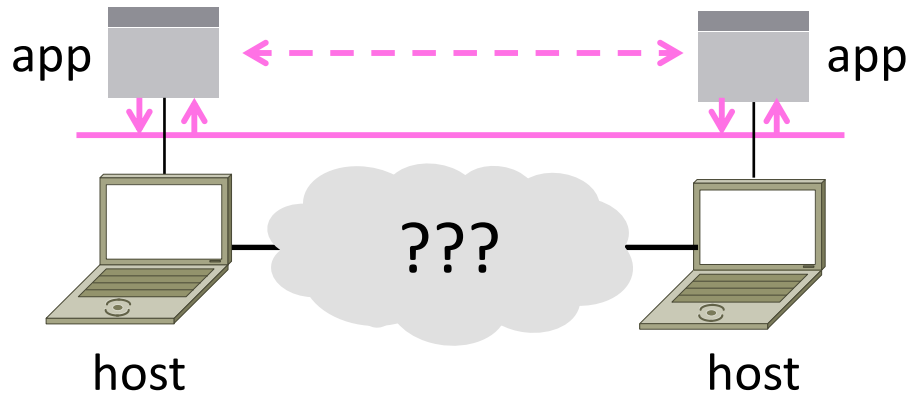
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Network Service API Hides Details

- Apps talk to other apps with no real idea of what is inside the network
 - This is good! But you may be curious ...



Traceroute

- Widely used command-line tool to let hosts peek inside the network
 - On all OSes (tracert on Windows)
 - Developed by Van Jacobson ~1987
 - Uses a network-network interface (IP) in ways we will explain later

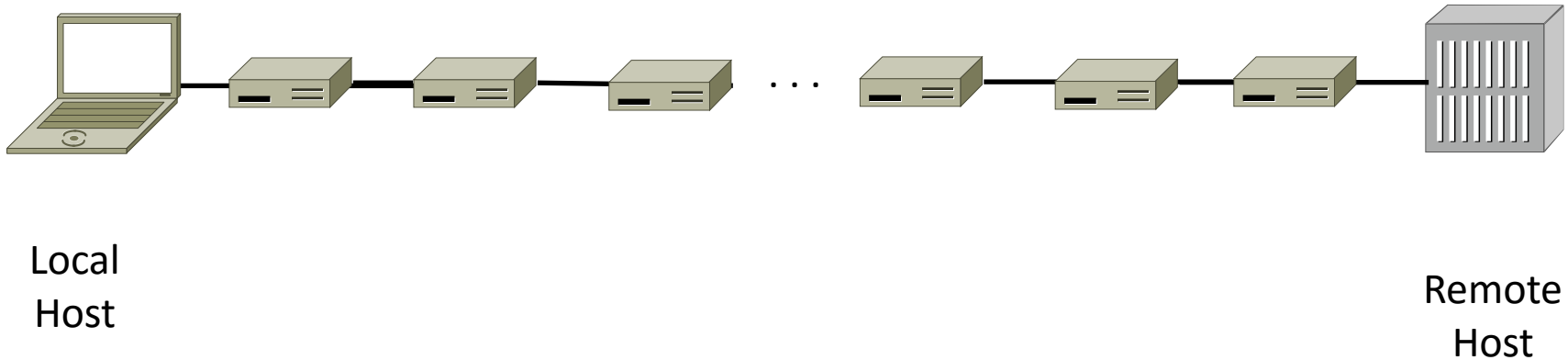
Van Jacobson



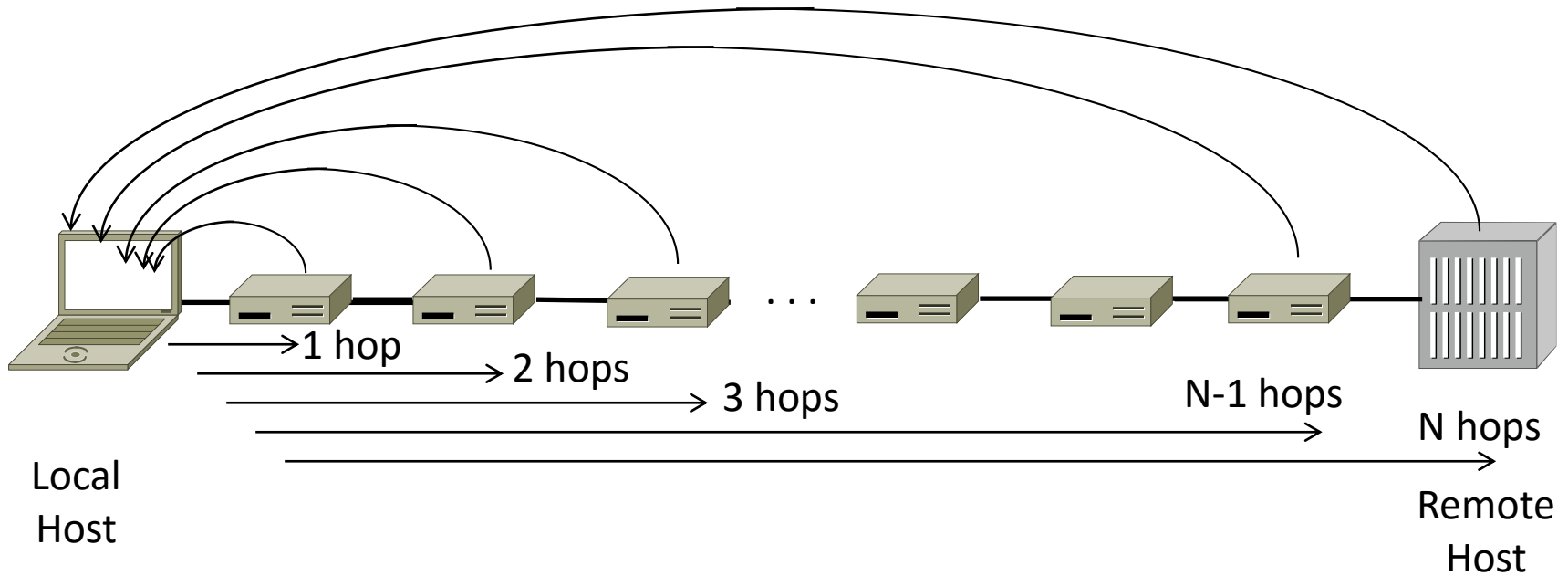
: Credit: Wikipedia (public domain)

Traceroute (2)

- Probes successive hops to find network path



Traceroute (3)



Using Traceroute

```
Administrator: Command Prompt
C:\Users\djw>tracert www.uw.edu

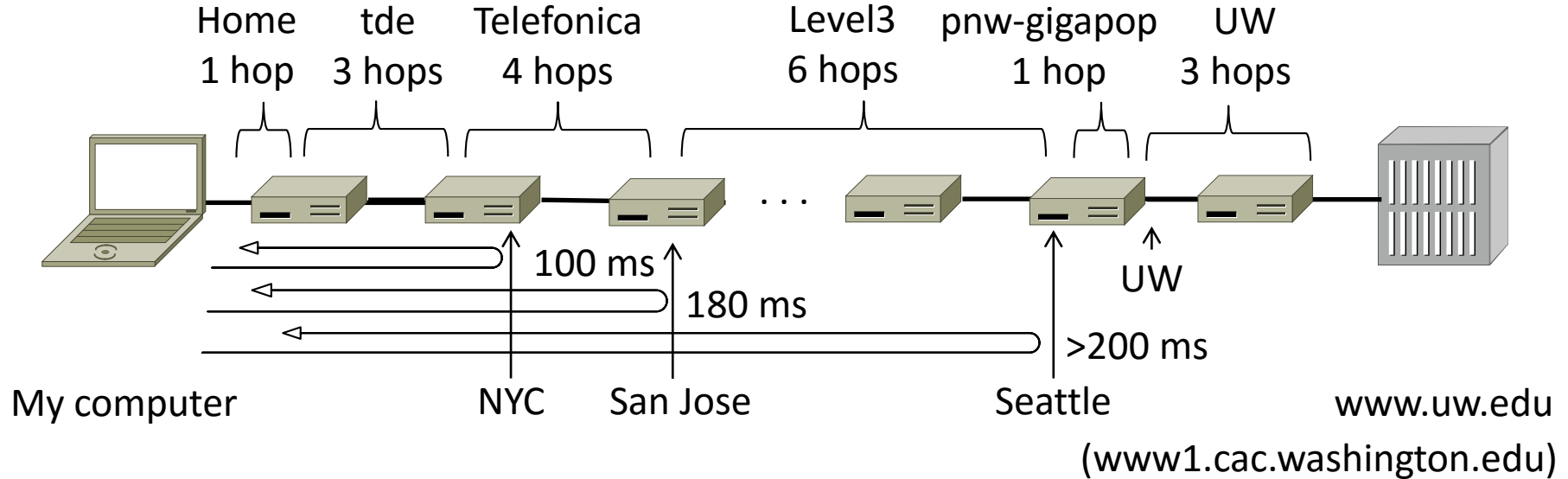
Tracing route to www.washington.edu [128.95.155.134]
over a maximum of 30 hops:

  0  1 ms    <1 ms   2 ms    192.168.1.1
  1  8 ms     8 ms    9 ms    88.Red-80-58-67.staticIP.rima-tde.net [80.58.67.88]
  2 16 ms    5 ms   11 ms   169.Red-80-58-78.staticIP.rima-tde.net [80.58.78.169]
  3 12 ms   12 ms  13 ms   217.Red-80-58-87.staticIP.rima-tde.net [80.58.87.217]
  4  5 ms    11 ms   6 ms    et-1-0-0-1-101-GRITBCNES1.red.telefonica-wholesale.net [94.142.103.205]
  5 40 ms   38 ms  38 ms   176.52.250.226
  6 108 ms  106 ms 136 ms  xe-6-0-2-0-grtnycpt2.red.telefonica-wholesale.net [213.140.43.9]
  7 180 ms  179 ms 182 ms  Xe9-2-0-0-grtpaopx2.red.telefonica-wholesale.net [94.142.118.178]
  8 178 ms  175 ms 176 ms  te-4-2-car1.SanJose2.Level3.net [4.69.0.225]
  9 190 ms  186 ms 187 ms  vlan80.csw3.SanJose1.Level3.net [4.69.152.190]
 10 185 ms  185 ms 187 ms  ae-82-82.ebr2.SanJose1.Level3.net [4.69.153.25]
 11 268 ms  205 ms 207 ms  ae-7-7.ebr1.Seattle1.Level3.net [4.69.132.50]
 12 334 ms  202 ms 195 ms  ae-12-51.car2.Seattle1.Level3.net [4.69.147.132]
 13 195 ms  196 ms 195 ms  PACIFIC-NOR.car2.Seattle1.Level3.net [4.53.146.142]
 14 197 ms  195 ms 196 ms  ae0--4000.iccr-sttlwa01-02.infra.pnw-gigapop.net [209.124.188.132]
 15 196 ms  196 ms 195 ms  v14000.uwbr-ads-01.infra.washington.edu [209.124.188.133]
 16 *      *      *
 17 *      *      *
 18 201 ms  194 ms 196 ms  ae4--583.uwar-ads-1.infra.washington.edu [128.95.155.131]
 19 197 ms  196 ms 195 ms  www1.cac.washington.edu [128.95.155.134]

Trace complete.
```

Using Traceroute (2)

- ISP names and places are educated guesses



END

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