Airborne Contagion:
Effects of a Worm on Wireless Networking

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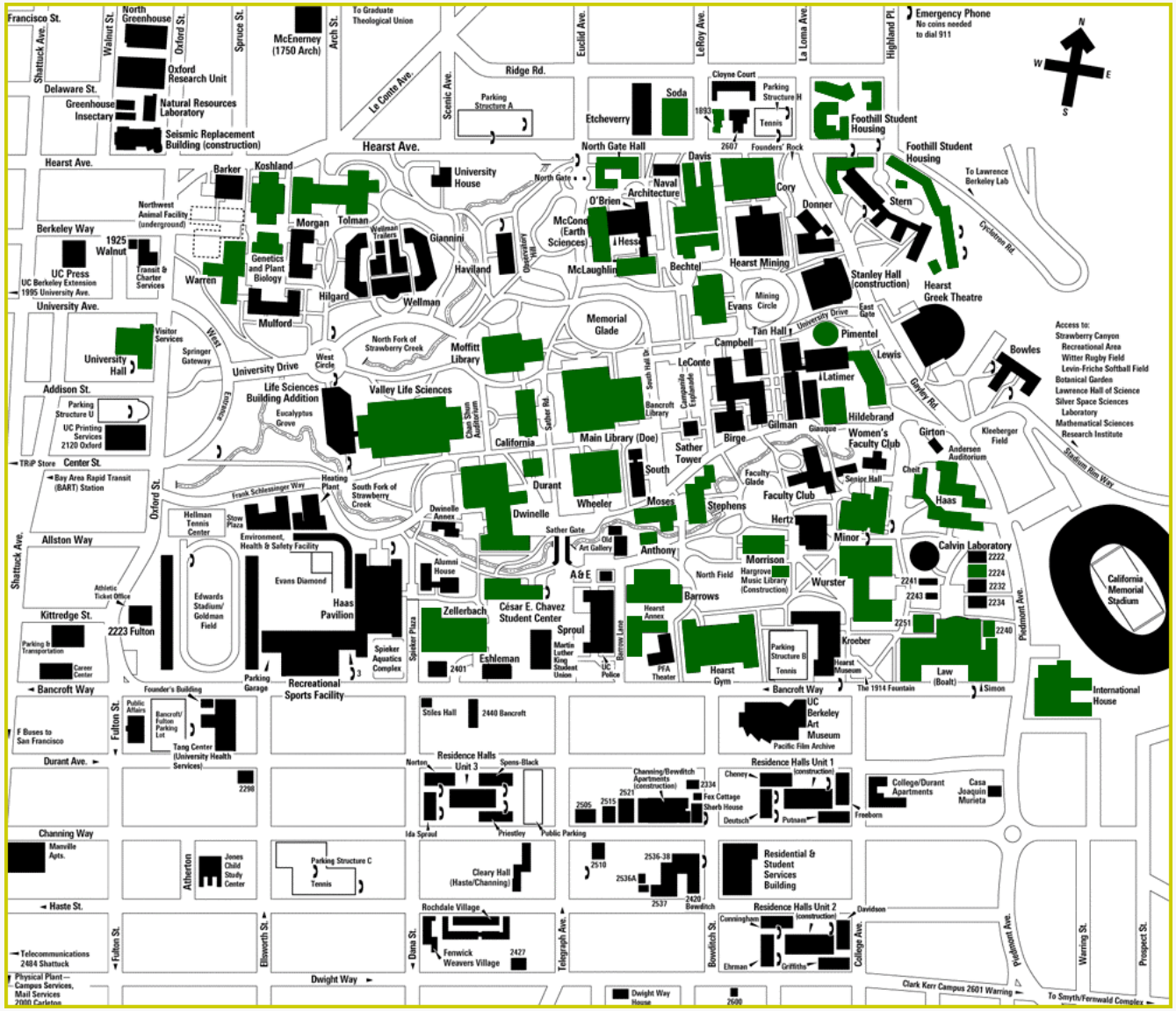
Overview

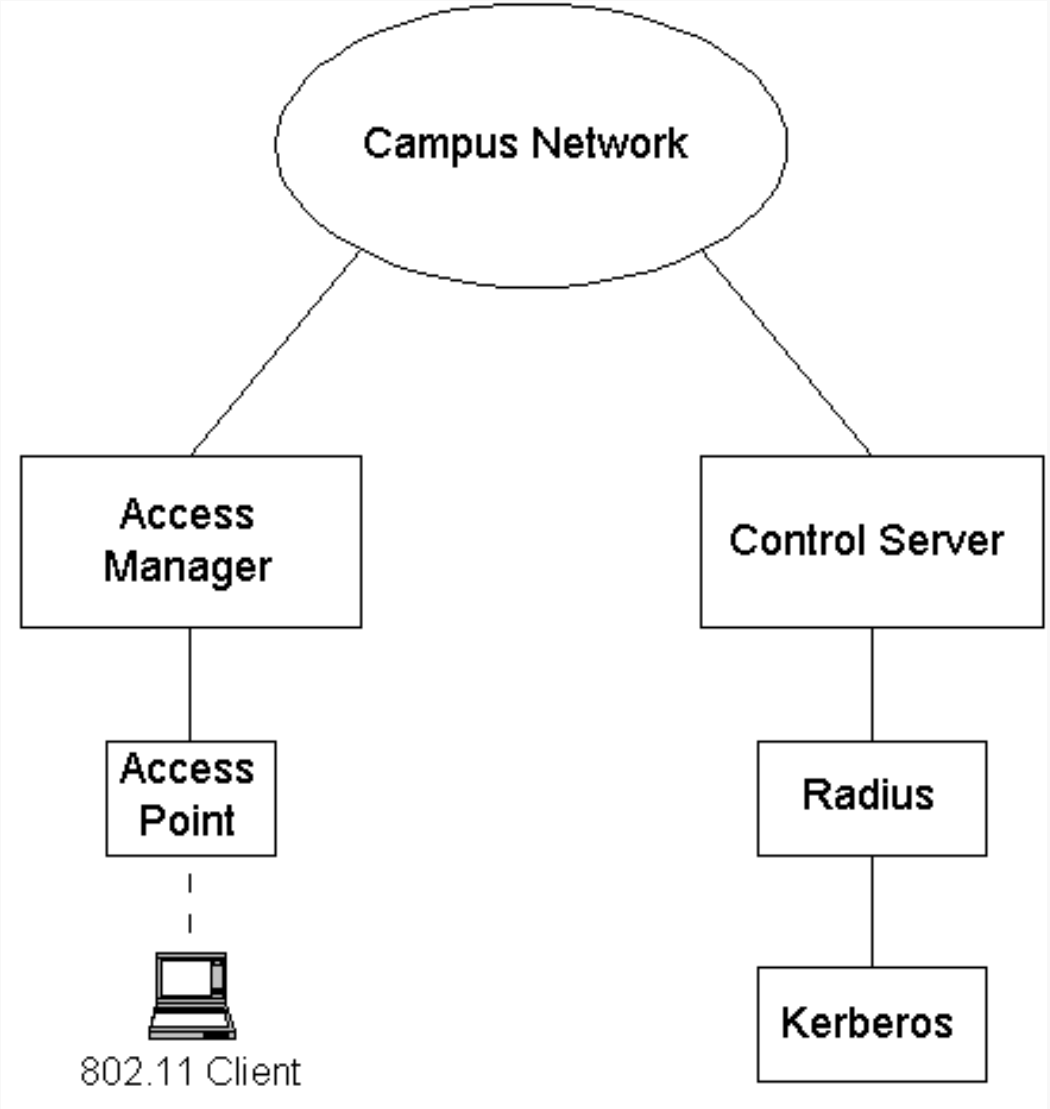
- Wireless coverage at UCB
- Logical topology
- Network detail
- Welchia/Nachi infection & spread
- Effects
- Quelling the noise
- Cleaning up
- Retrospective

Wireless Coverage at UCB

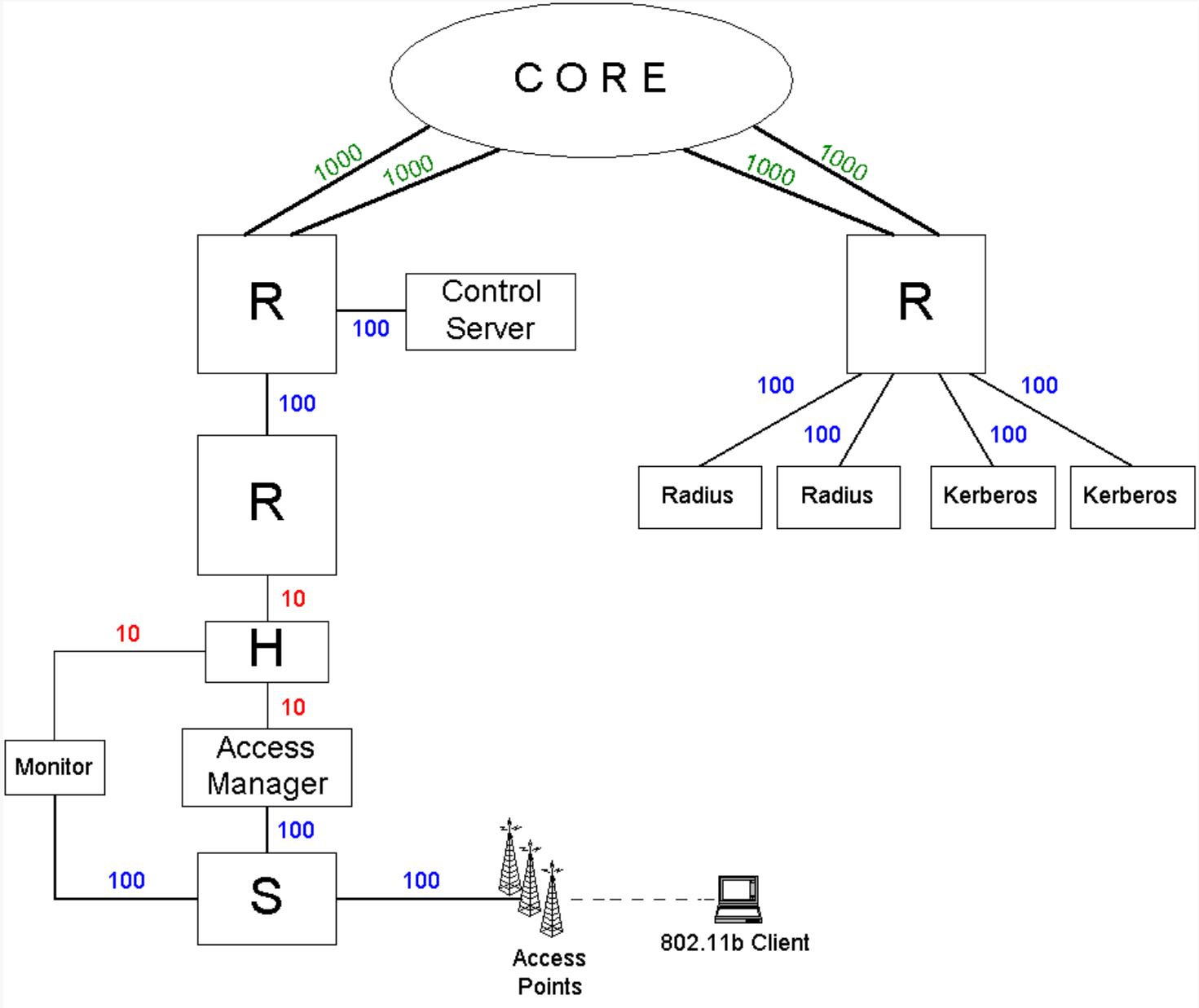


217 APs, 14 AMs, 3900 users (2200 in May 03)

Logical Topology



Network Detail



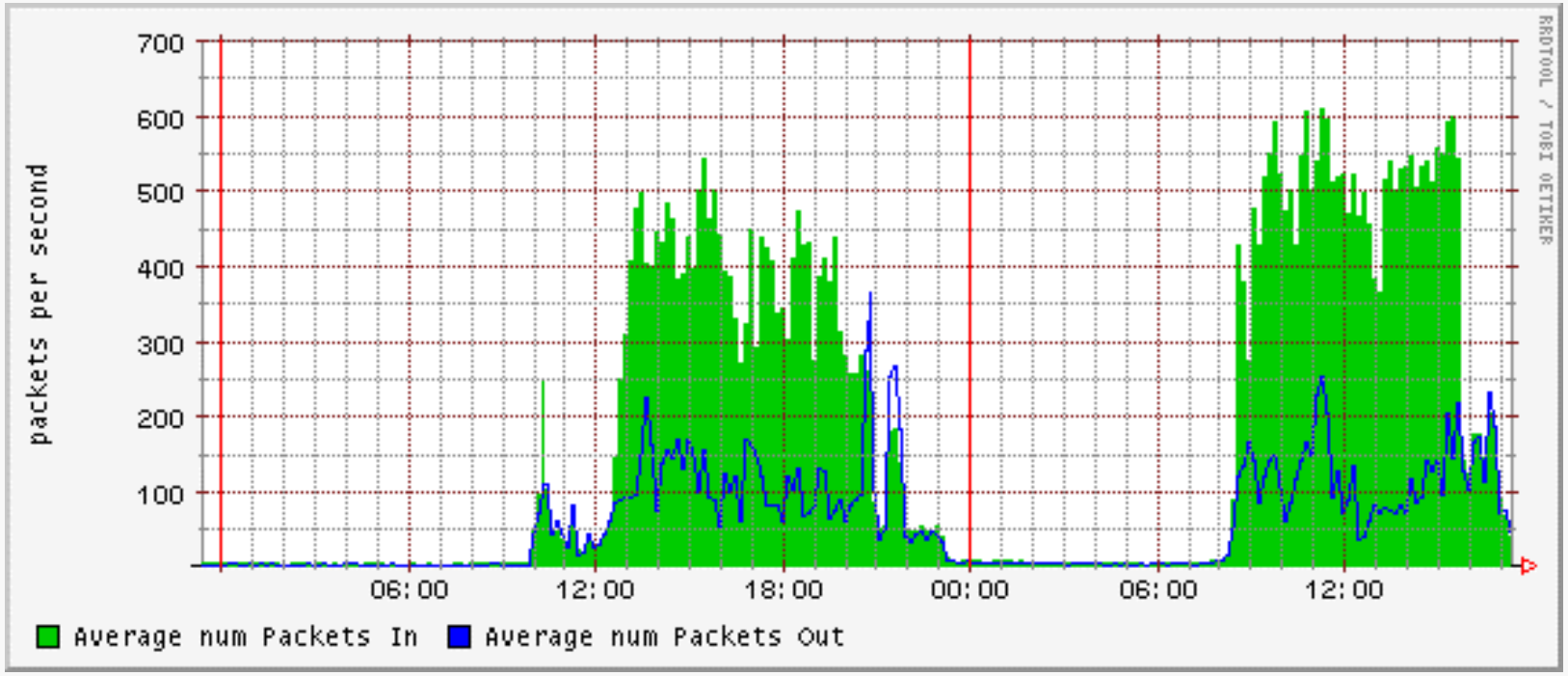
Welchia/Nachi: Infection and Spread

- Blaster released on 11 August 2003
- Welchia: 18 August (1st day of semester!)
  - ICMP scan of local /16 (then others)
  - DCOM RPC 135/tcp
  - IIS WebDav 80/tcp (discovered in March)

  - multithreaded: up to 300 simultaneous targets

Effects

- Internal DOS: bandwidth saturation
- Authentication hindered
- CS ⇔ AM connection lost.



Quelling the Noise

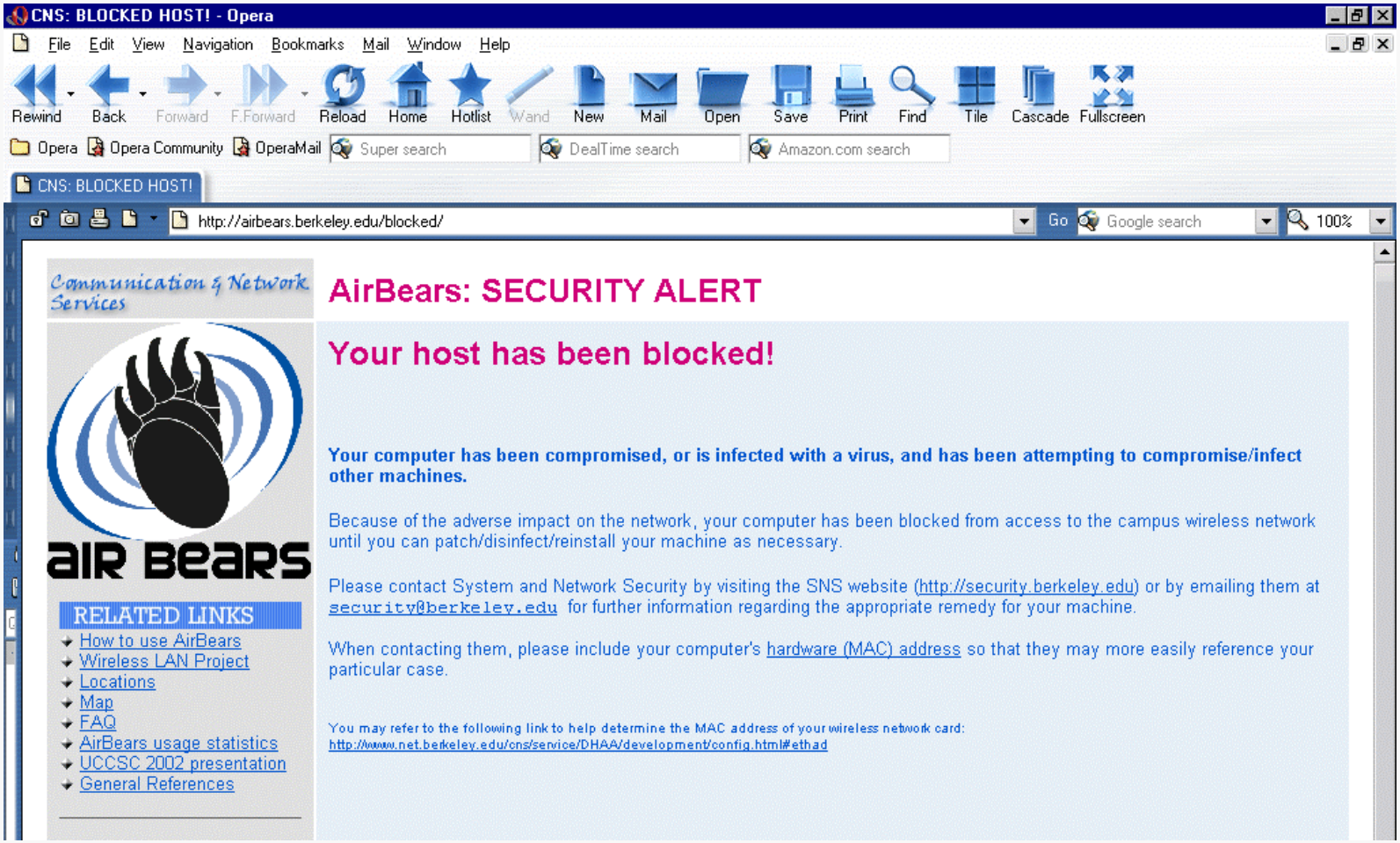
- ICMP signature
  - echo request (type 8, code 0)
  - 92 byte datagram
  - payload filled with "`0xAA`" (decimal 170)

```
0x0000   4500 005c 2dc8 0000 7901 66a6 xxxx xxxx        E..\-...y.f.....
0x0010   xxxx xxxx 0800 3318 0200 6d92 aaaa aaaa        ......3...m.....
0x0020   aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa        ................
0x0030   aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa        ................
0x0040   aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa        ................
0x0050   aaaa aaaa aaaa aaaa aaaa aaaa                  ............
```

- Packet filtering using tcpdump rules

Cleaning Up

- MAC address blocking
  - redirection to information page



Retrospective

- Dropped connections not logged
- Shared wireless cards (e.g., library)
- Dependence on distinct signature
- Topological improvements
- Upgrade, upgrade, upgrade . . .