[Summary of Michael Kende's presentation Nov 23, 2021]

- The history of interconnection

- The Internet appears to be a single network, but it is a network of networks
- Networks must connect to exchange traffic
- In the 1990s the US government made the Internet fully commercial - needed a way to interconnect
- Much of telecoms was regulated, could have adopted regulated interconnection, but didn't
- Instead allowed commercial negotiations - one reason because there was a lot of competition
    - Peering - Two providers - peers - exchange their own traffic with each other. If they are similar then there are no settlements (competitors cooperating to make the Internet)
    - Smaller providers may need to buy transit from a larger provider, to get the full range of the Internet
- May use an Internet Exchange Point to make it more efficient
    - one connection
    - Started spreading all over the world
- All this helps to keep costs down and keep traffic local

- Interconnection evolves -

- In the early days traffic was very low volume - mostly text, and much of Internet in US
- As video grew in volume, and Internet more global, two things happened
    - Increase in cost of carrying traffic with video
    - Increase in latency with distance and congestion
- Two changes in interconnection
    - Changes in commercial negotiations - some providers asked to be paid for peering due to extra traffic volume
    - Content delivery networks began to deliver traffic closer to users - by IXP or on-net - with own networks
- Lower cost and latency for ISPs = better for consumers

- Impact of regulation –

- Regulation would have a significant impact on the market
- Termination fee (aka sending party network pays)
    - Termination monopoly - want to keep charging more
    - as mobile operators did with calling party pays
    - and eventually needs to be regulated with cost models
- This is different than paid peering
    - There are alternatives to paid peering (CDN, transit)
    - So it can be commercially negotiated
- Hard to get rid of regulated rates
    - 15 years ago no model to monetize content, but ISPs making money

    - Some argued for subsidies from ISPs to content providers
    - Would have impacted incentives to innovate
- Same thing would happen today with regulated payments