NCREN Access

Internet2 Spring 2008
Member Meeting
April 23, 2008
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A brief overview of MCNC

- Est 1980 by State of NC as Not-for-profit
- Initial purpose of fostering microelectronics research in RTP
- Network mission added in mid 1980s
- Supercomputing added 1990 and later discontinued
- Funded by direct appropriation from the State
- NOT membership based

WARNING: SOME (POSSIBLY ALL) DATES ARE APPROXIMATE
“Gateway” history

• In early ‘90s access to NSFnet funded by NSF grant(s)
• Statewide wide-area network funded through direct appropriation
• Intra-state networking transitioned from direct appropriation to a contract with the UNC System office around 1994-5
• NSF grant for access to ANS was decreasing funding over a 5-year period ending around 1998

IP transport has been a fundamental service since the beginning
In an effort to equitably (ha!) distribute the unfunded cost of Internet access the affected institutions and MCNC developed a formula henceforth known as “the algorithm”

- Campus Bill = 50% percentage of total user points + 50% percentage of total E&G budget
- User points = total student headcount * 0.5 + total student FTE * 0.5 + faculty/research headcount * 1.0
- Result: My campus is subsidizing your campus and I don’t like it!
Need something more ‘fair’

- More than one attempt to develop a better algorithm resulted in no change.
- Finally after much contemplating of our collective belly buttons we decided to move to a measured utilization system.
- We needed to phase this in over time making ‘the algorithm’ add a term for the next three years.
- Year 1: 25% Percentage of total utilization
  75% algorithm
- Year 2: 50% utilization, 50% algorithm
- Year 3: 100% utilization
- Utilization = average inbound and outbound 85th percentile traffic measured monthly
- Video conferencing was transitioned to MPEG2 over IP (nominally 6Mbps) at about this same time and the complex utilization calculation was intended in part to factor out video use.
Now it costs too much

- During late 1990s we were chronically short on bandwidth
- Internet links hitting 100% for extended periods of time
- Community decides to implement 10% fee increase per year to address bandwidth growth rather than face emergency upgrades every year
- Bandwidth costs began to fall faster than growth (in part because of Quilt CIS) and we developed a surplus held in a reserve fund
- Community demands to know why we charge so much more than the going rate
- I know – Lets change the method for charging...
Tiered Service

• After much navel gazing the community (and returning the surplus to the campuses) decides on a new method

• Each campus selects a utilization ‘tier’ for the coming year and will pay the associated fee

• If the campus exceeds the projected bandwidth they may be elevated to the appropriate tier

• A campus cannot move to a lower tier except at the beginning of the year
Unintended consequences

• There is great interest in supporting collaborative tools, more ubiquitous use of a variety of online classroom tools, higher quality video, etc – moving up the stack

• A utilization-based cost model effectively discourages use of the network because every new application costs more!

• More belly button contemplation ensues (by me anyway)

• Perhaps we should move away from utilization

• Stay tuned...
Access services

• IP transport is the fundamental service
• Research network has been a part of the basic service since SEGP implemented
• Core campuses charged only for the share of external access costs
  - originally this was a pass-through of the service provider bills
  - Now includes labor, related hardware, related circuits
  - Research network access has been recovered over the years in an ad hoc manner
• Interactive video is included for core campuses and can be an add-on for others
Thanks!