NPTF WIRELESS STRATEGY SESSION

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March 21, 2011
UPCOMING MEETINGS

- May 16 (Commencement)
  - Is May 19 (10-12am) better?
- June 20
- July 11
- August 15
- September 19
- October 17
- November 7 (Final Rate Setting)
- All meetings in 337A from 1:30-3:00pm
Agenda

• What is wrong with our current wireless service?
• What has changed? What are the drivers for this change?
• What are our customers’ expectations today? What will they be in 2015?
• What challenges do we face?
• How do we address these challenges?
What is wrong?

- **Technology**
  - We have gone overboard on security, making connectivity difficult
  - Not enough proactive monitoring
  - Need better security logs

- **Support**
  - Need better communication and customer service
  - There are too many mistakes made by staff

- **Expectation**
  - Coverage is not everywhere

- **Funding model**
  - Need better DHCP IP logs
  - Constant increase in IP pools
What has changed?

- Wireless is primary connection, not a luxury network
  - Faculty curriculum delivery/academic use
  - Staff work use increasing
  - It has been the primary network for years for students

- Proliferation of wireless devices and users
  - Over 20,000 unique AirPennNet users with 27,000 unique MAC addresses in February
  - An additional 6209 unique users authenticating on 7011 devices just last week on AirPennNet-Guest
  - Wireless users and devices up over 30% since September 2010
What are our customers’ expectations?

- We need to agree on expectations (coverage, capacity, SLA, etc.) and work towards implementing them successfully
- Which ones can we solve now?
- When can we deal with the rest?
Challenges

- Network designed for old wireless technology
- Underestimated the speed of the wired to wireless shift by our customers
- Underestimated the speeds, complexity and variety of devices
- Consumer devices are driving change in the enterprise now
  - No advanced look for planning purposes at new products and technologies
  - Some vendors hold things secretly and then spring them on consumers and businesses at the same time
  - Harder to plan proactively without any knowledge of new devices
Challenges

- Wireless is different from wired
  - Wired has no security for access
  - Wired is easier to plan for capacity and coverage
  - Wired is static
  - With wireless there cannot be a static plan and designs will need to constantly evolve and be reassessed

- This is will force a radical change in our service delivery
Wireless Funding Challenges

- How do we fund robust wireless campus-wide?
- 100% coverage requires funding where there are not always obvious “owners”
  - Outside (Penn and Shoemaker Parks)
  - Multi-tenant buildings
- Increased density, where needed, requires incremental funding
  - 5GHz operation with dense deployment may be ideal
    - Eliminates most interference issues vs. the 2.4Ghz unlicensed spectrum
    - Higher client connection reliability
  - Would permit much higher performance
  - Would enable better use of features in wireless controllers
    - Adaptive radio management
    - Air fairness and band steering
Wireless Funding Challenges

- Need to permanently solve the problem of too few IPs allocated to some APs
- Should we subsidize wireless IP addresses?
  - AirPennNet
  - AirPennNet-Guest
- Should wireless access points and/or ongoing monthly fees be in the central infrastructure fee bundle?
- Should we eliminate IP charges all together and just have a headcount model for the central infrastructure fee?
Addressing Wireless Challenges

- ISC continues to push its vendor on repair of features and bug fixes that in the past have caused us some instability with certain clients
- Improving communications
  - Monthly AirPennNet Special Interest Group
- Resurveying trouble spots
  - Hired RF engineering consultants
  - Piloting high density wireless
    - 5 Ghz coverage for locations with high concentration of users
- 2011 summer project to significantly enhance wireless capacity in Residence Halls
- ISC N&T has increased IP address ranges on AirPennNet at no cost to the schools
  - Costs will be frozen as of February 28, 2011
Addressing Wireless Challenges

- We need your help
  - If your area is supposed to have 100% coverage, send us information on dead spots
  - Submit all trouble tickets
  - Ensure that your end users are making AirPennNet the primary wireless network.
    - Reinforce use of AirPennNet-Help
  - Involve us in future planning for wireless device uses in your locations
    - Do not assume that we have the same spare capacity for wireless that we have for wired