# Performance Implications of Link Characteristics (pilc)

**Mail List, etc: http://pilc.grc.nasa.gov/pilc**

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# Agenda

1. **Agenda bashing, other wasted time**
   (Falk, 5 minutes)

2. **Recap/Overview**
   (Falk, 15 minutes)

3. **Comments from list & charter review**
   (Allman, 20 minutes)

4. **Open floor for discussion of charter**
   (Allman, Dawkins, Falk, 90 minutes)

5. **Adjourn**

# Recent History & Observations

- **TCP over Wireless 'informal meeting' in IETF-42 in Chicago expressed desire build on work of tcpsat**
  - Wireless infrastructure community concerned about network (ie. TCP) performance over 'lousy' links
  - See: `draft-montenegro-pilc-ltn-01.txt`
- **TCP over Satellite was misnamed;**
  - Should have been TCP over long delay, high bandwidth links
  - Would have drawn right expertise; satellites not relevant to questions that were posed
  - Non-scalable approach for IETF to address performance issues
- **Since IETF-43 in Orlando...**
  - PILC BoF in Orlando generated significant interest and discussion on mail list
    - Lots of enthusiasm for a document recommending link design
    - Several active research efforts on overcoming noisy links
    - Most energy is from wireless WAN folks
    - A draft charter has been developed…

# slums vs. pilc

- **slums (Support for Lots of Unicast Multiplexed Sessions)**
  - ➤ Addressing transport needs of applications for which TCP performs inefficiently
  - ➤ Essentially a top-down look at TCP performance
- **pilc**
  - ➤ Addressing interactions between links and TCP performance -- regardless of application
  - ➤ Essentially a bottom-up look at TCP performance
- **The Transport Area Directors (& working group chairs) will work to keep activities coordinated**

# Why create a working group?

- **The Wireless WAN community is building networks and is asking for IETF guidance**
  - These networks will be deployed soon and will have large numbers of users
- **However, none of the link characteristics under discussion are isolated to W-WANs**
  - Solutions and recommendations will have broad utility over many environments (e.g., satellite, modem, long-haul fiber)
- **Additionally, the IETF should be aware of non-standard performance enhancing solutions being deployed in the Internet**
  - Many of these solutions are being developed outside of the research community
  - The IETF should advise implementers of the risk of their solutions and the danger they pose to the Internet
  - Where possible IETF should advocate end-to-end solutions to mitigate TCP performance limitations
    - (…and not violate the end-to-end principle)
    - (…however not all mitigations in use do this…)

# Performance Enhancing Proxies
*(aka Active Network Elements aka Spoofing)*

- **PEPs are often used as a mechanism to provide non-standard improvements to TCP performance over lousy links**
- **It is widely accepted in satellite and wireless communities that PEPs are necessary and will continue to be**
- **Why?**
  - ➤ Many current and legacy commercial stacks are not 'modern' TCPs
  - ➤ Perception that deployment of new stacks will be slow
  - ➤ Perception that deployment of IPsec will be slow
  - ➤ Perception that modern TCPs will not improve performance sufficiently
- **Today, most PEPs are in private networks or tail circuits**
- **However, it is possible that these mechanisms will creep into the cloud**
  - ➤ As overseas users become more concerned about performance, likely to see them appear in non-US ISPs
- **Perceived incompatibility with host-to-host encryption may inhibit deployment of IPsec**