# FEC BB
# FEC INFO
# LCT BB

**All sent to IESG for consideration as RFCs**

**FEC BB and LCT BB as Experimental**

**FEC INFO as Informational**

**(although for some reason still not in the RFC Editor Queue)**

# ALC PI status report

**M. Luby, Digital Fountain**

**J. Gemmell, Microsoft**

**L. Vicisano, Cisco**

**L. Rizzo, ACIRI and U. Pisa**

**J. Crowcroft, UCL**

# Proposed changes to 06

- **Clarify that session is from a single sender, and that receiving from multiple senders is at the application level above ALC**

- **Transmission Session ID**
  - **06:**
    - **TSI explicitly required to be in each packet.**
  - **Proposed:**
    - **TSI explicitly required to be in each packet UNLESS the sender is supporting only one session, in which case TSI MAY be omitted and is then presumed to be 0.**
    - **Pro: Saves space in packet header if only one session per sender**
    - **Cons: LCT requires TSI in header – is useful for network elements to classify channels according to session – inconsistent across senders**

# Proposed changes to 06

- **FEC Object Transmission Info. communication**
  - **06:**
    - Must be communicated out-of-band before receiver joins the session.
  - **Proposed:**
    - Can be communicated out-of-band before joining the session
    - Can be dynamically communicated out-of-band as the session is progressing
    - Can be communicated in-band as the session is progressing – add a fixed length and variable length Header extension to carry this information

# Proposed changes to 06

- **Transmission Object ID – when required**
  - **06:**
    - If more than one object carried in the session then TOI required to be carried in each packet
  - **Proposal:**
    - If more than one object carried in the session then TOI required for all but one object, and the object not carrying the TOI is presumed to have TOI = 0
    - Pro: Saves some space in packet header for one object
    - Con: Is inelegant and inconsistent – can cause confusion if one of the objects explicitly carries TOI = 0
- **Transmission Object ID – scope**
  - **06:**
    - Implicitly scoped globally
  - **Proposed:**
    - Explicitly scope within session

# Next for ALC PI

- **Decide these issues here**
- **Revision 07**
- **Last call**

# Wave & Equation Based Rate Control WEBRC BB

**M. Luby, Digital Fountain**

**V. Goyal, Digital Fountain**

# WEBRC outstanding issues

- **Number of channels used per session can be large**
  - Depends on timeout for general query
    - 1 channel used for each 10 seconds
    - 180 seconds default value
  - Depends on ratio of maxrate to minrate
    - 8 Kbps is default minrate
    - number of groups = $\log\_(4/3)$ (maxrate/minrate)
  - This is an issue for ASM, not so for SSM
  - State information in routers/switches should be ok for this if ok for other multicast apps

# WEBRC outstanding issues

- **Ability of networking infrastructure to scale to handle receivers that send one IGMP join and leave message each 10 seconds**
  - Performance figures on the amount of IGMP messages routers/switches can handle
    - When heavy data packet load
    - What impact on data packets?
    - What impact on IGMP latency
  - Same questions for resulting PIM SM messages
- **No performance figures yet from vendors**
- **Digital Fountain replicator performance figures**
  - Similar to IGMP join message processing
  - 19 ms latency for join messages when 1 receiver
  - 20 ms latency for join messages when 10,000 receivers

# WEBRC outstanding issues

- **Long IGMP and PIM SM join latency can adversely affect throughput**
- **Losses due to behavior of multicast protocol can adversely affect throughput**
  - **RPs**
  - **Switchover from (*,G) to (S,G)**
  - **MSDP**
- **Recommendations?**
  - **Use SSM**
  - **If using ASM**
    - **Place RP near sender**
    - **Do not use MSDP if it can be avoided**

# WEBRC roadmap

- **Full Technical paper**
  - Target date April 1
- ***ns* code and website of results available**
  - Target date April 1
- **Dummy net simulations**
  - Target date June 1
- **Real world experiments**
  - Target date August 1
- **RFC target – September 2002**