

Fragmentation Lessons

- ◊ Fragmentation wastes bandwidth
 - Entire packets transmitted if fragment lost
- ◊ Fragmentation requires router complexity
 - More than just forward or drop decision
- ◊ Avoid fragmentation if possible
 - Use PMTUD
 - Discover max possible packet size
 - Use that as MSS for TCP
 - Keep UDP packets small
 - Avoid fragmentation
 - Probably...

IPv6 Fragment Header



- ◊ Fragment Offset & MF
 - Identical to IPv4
 - Except now flags are where they belong
- ◊ Identification
 - Identical purpose, but 32 bits
 - Less chance of accidental collision
- ◊ DF
 - Not needed

IPv6

- ◊ Requires use of Fragment header
 - Only source nodes add headers
 - Only source node can fragment packets
 - No router complexity
- ◊ No overheads when no fragmentation
- ◊ PMTUD is required
 - Or packets must remain smaller
 - than guaranteed PMTU
 - 1280 for IPv6

Protocol Development

- ◊ Investigate existing methods
- ◊ Find what can be improved
 - Especially simplified
 - Or enhanced without complication
- ◊ Learn what is essential, but missing
- ◊ Develop new/modified protocol
 - keeping the good parts
 - deleting the:
 - unused
 - failed
 - avoid unnecessary "improvements"