

Normalization Marker for AF PHB Group in DiffServ draft-lai-tsvwg-normalizer

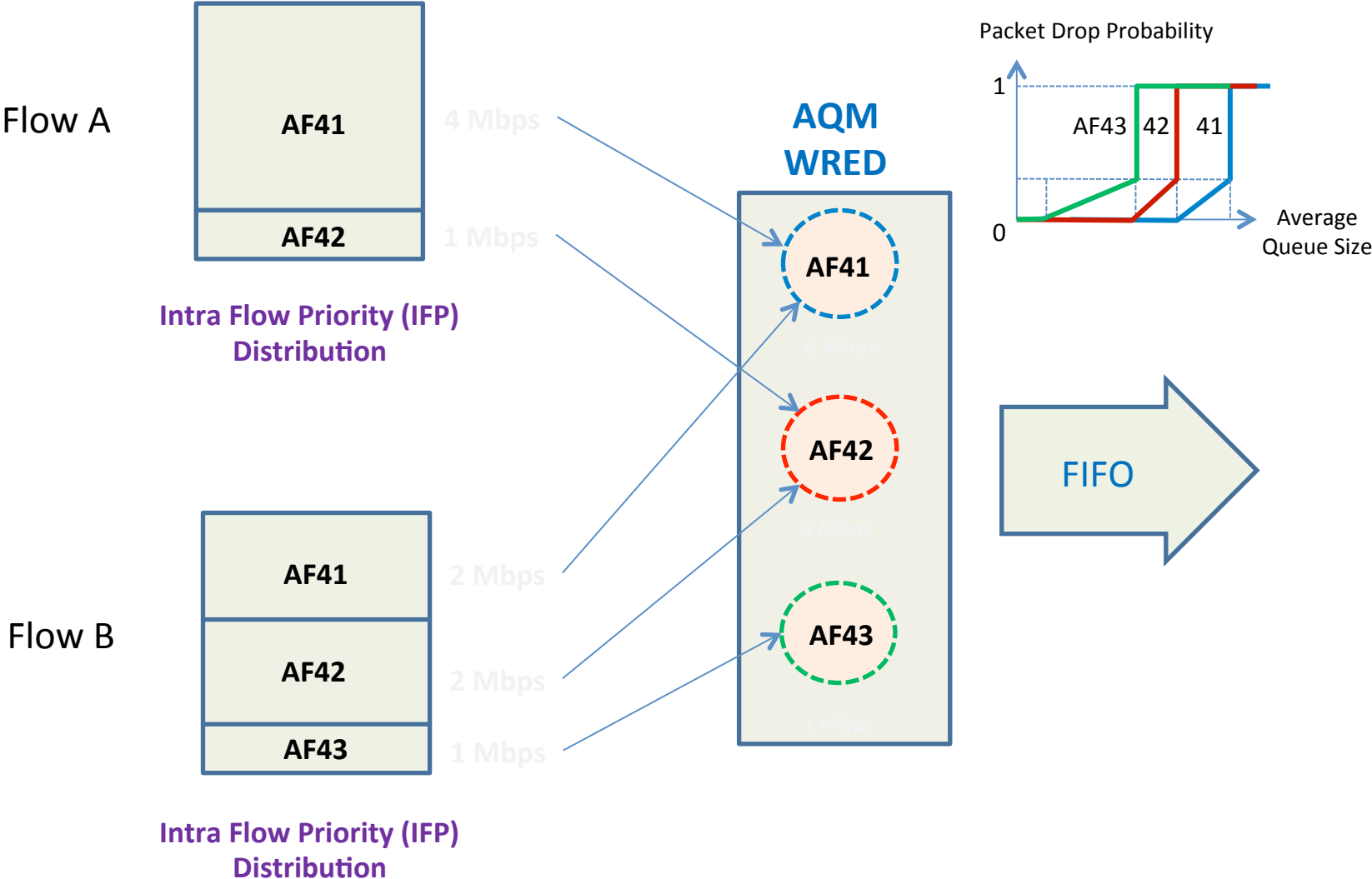
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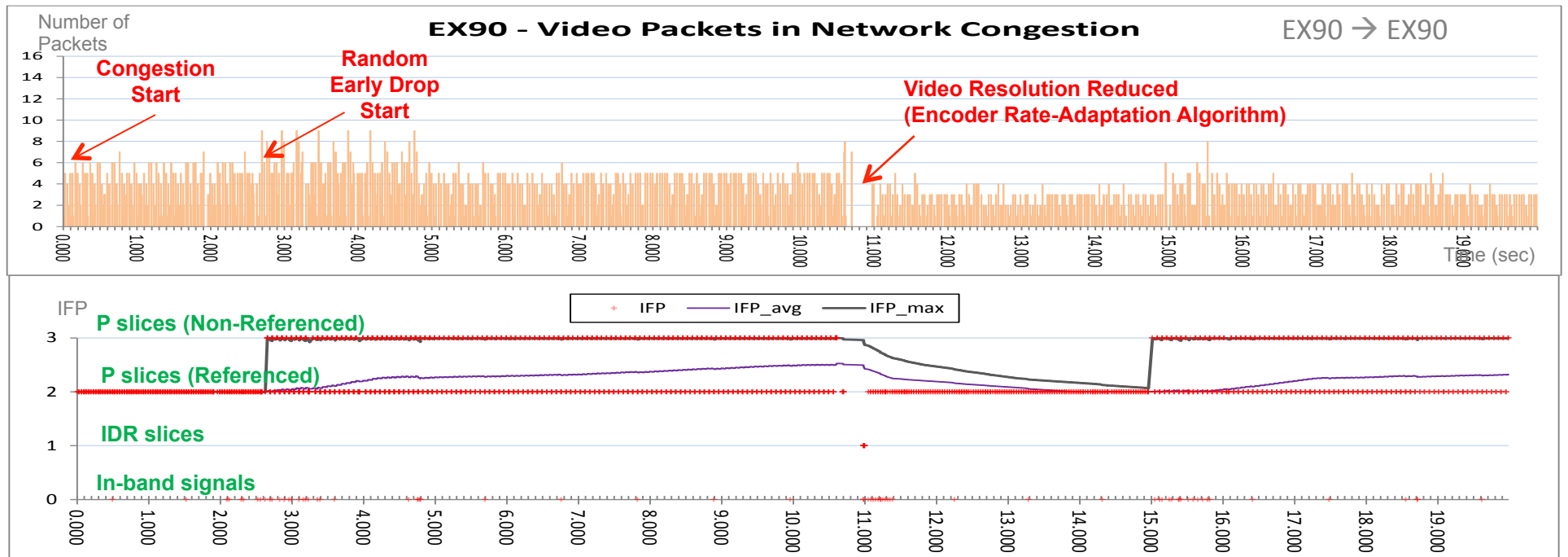
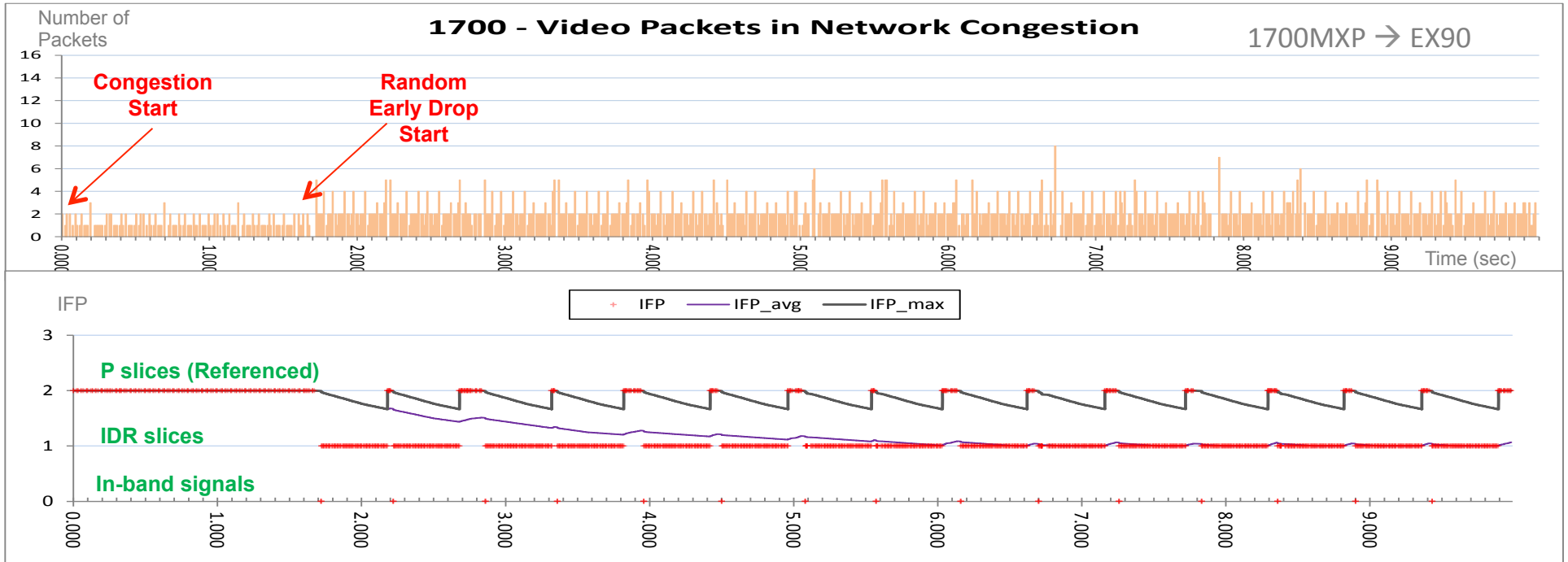
IETF 87 in July 2013

Outlines

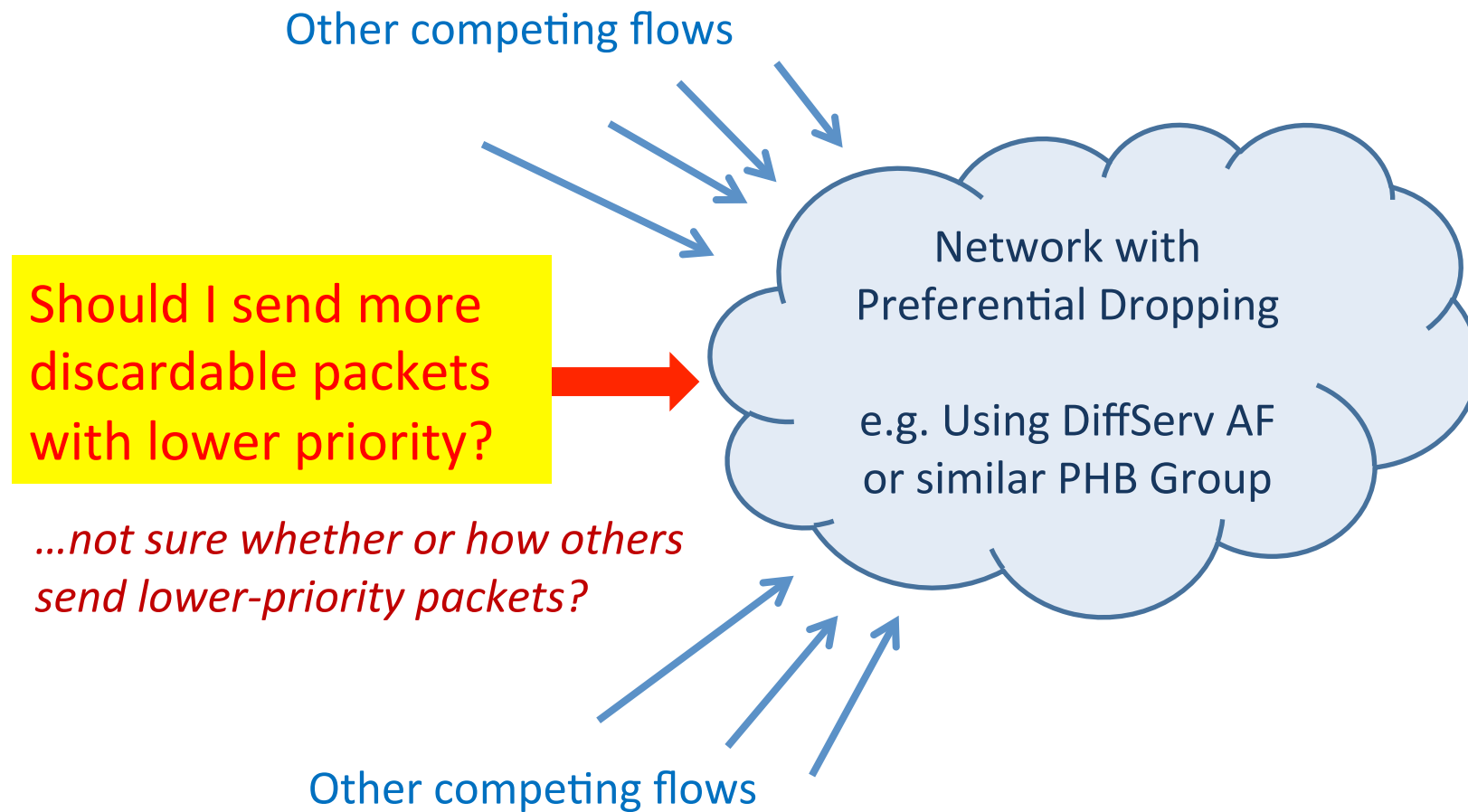
- **Fairness problem**
 - Preferential dropping at congestion
 - Examples and lab results
- **Proposal**
 - Normalization marker in AF (or similar) PHB group
 - Incentive for more discardable video packets

Preferential Drops by WRED with AF4x Markings

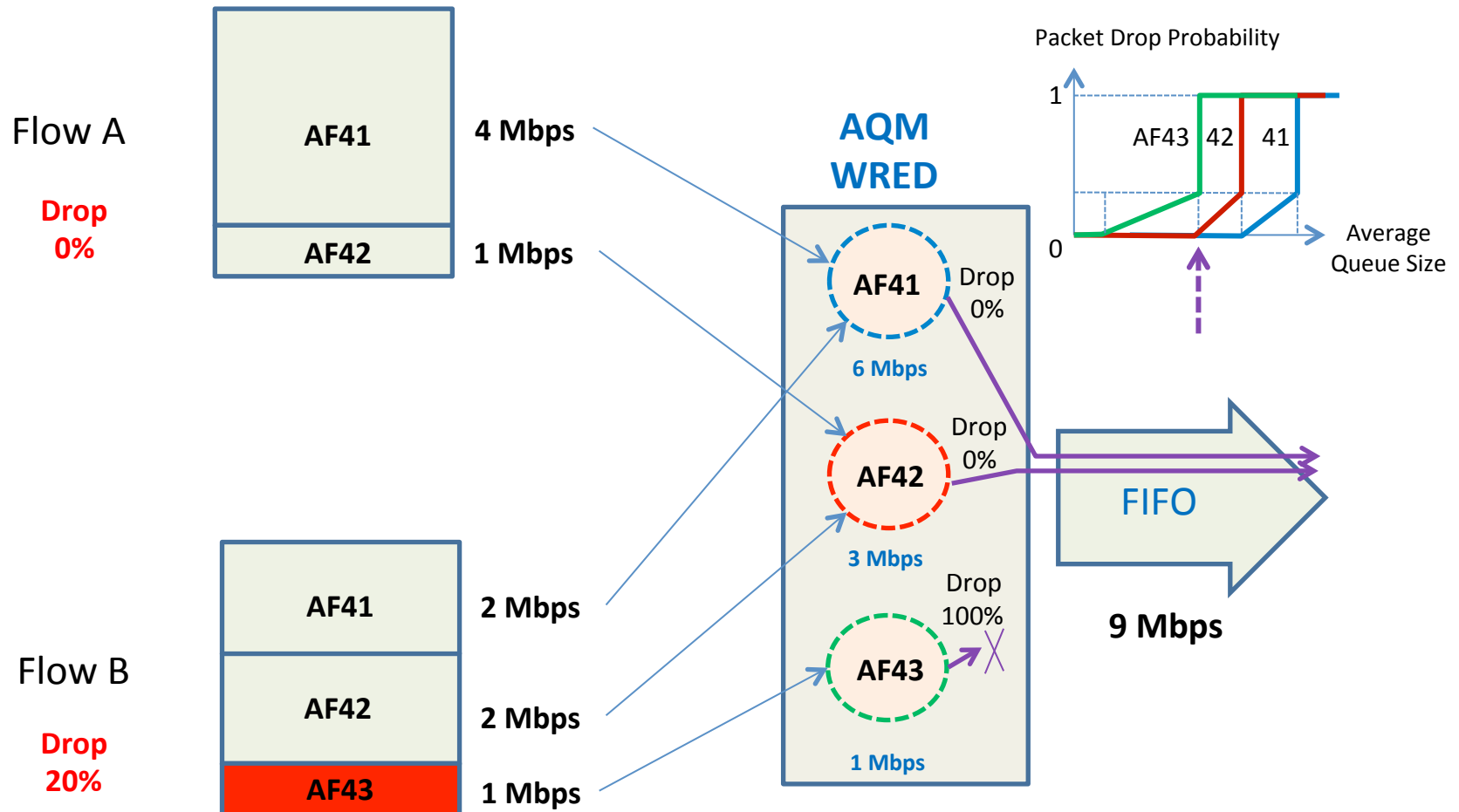




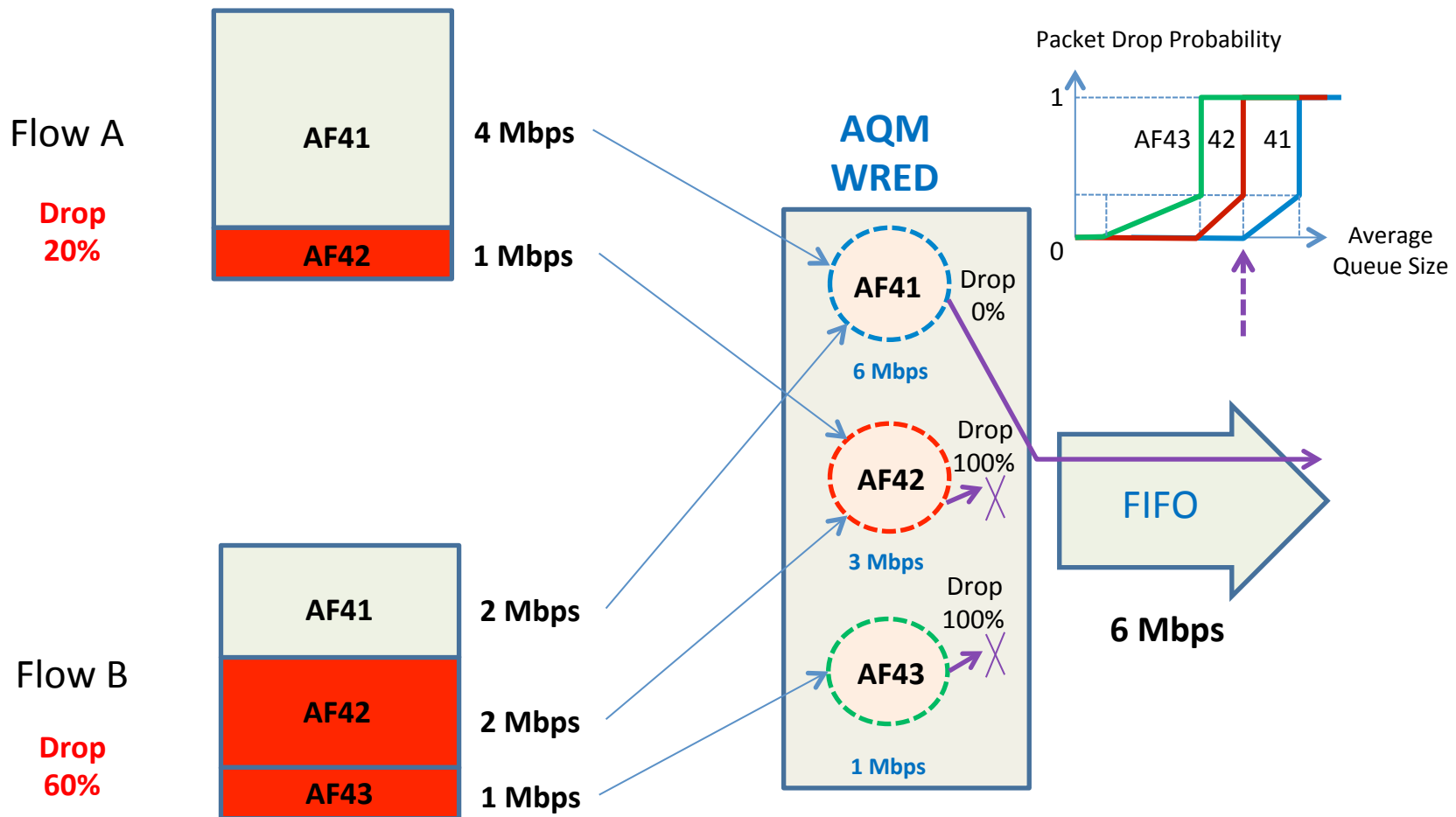
Add Fairness in Preferential Dropping: Incentive for More Discardable Packets



Fairness Problem: Case #1: Output BW = 9 Mbps

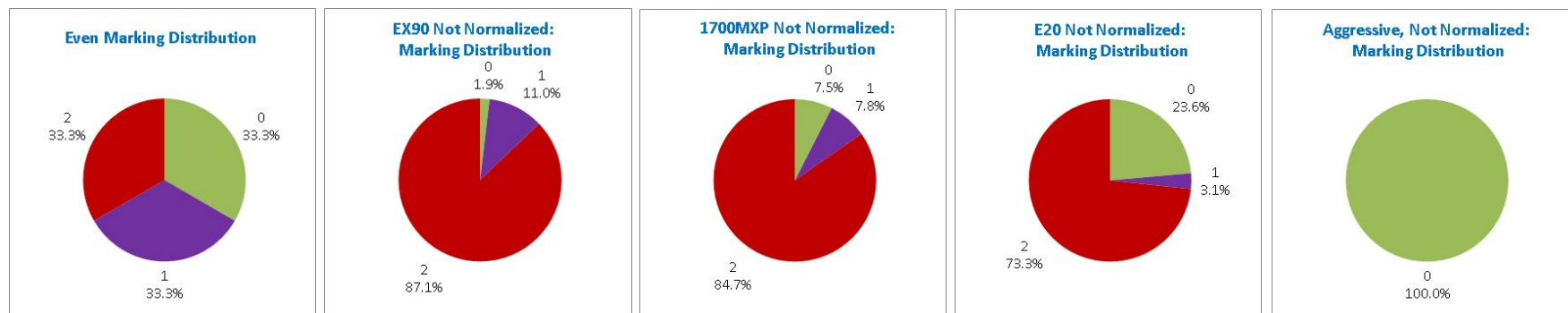
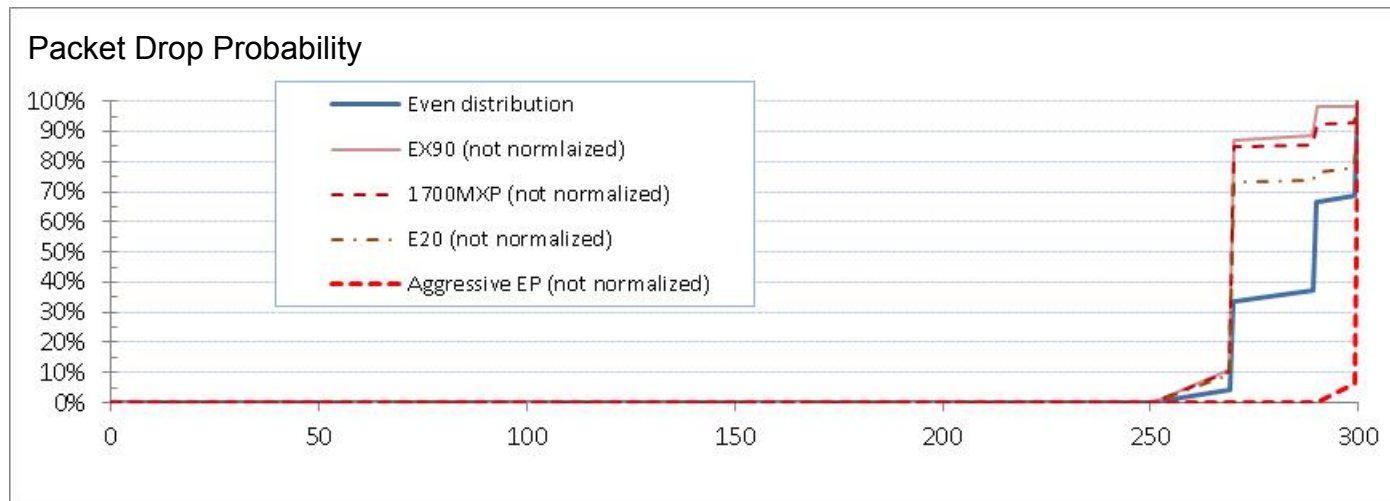


Fairness Problem: Case #2: Output BW = 6 Mbps



Lab Results: IFP Distribution per Flow

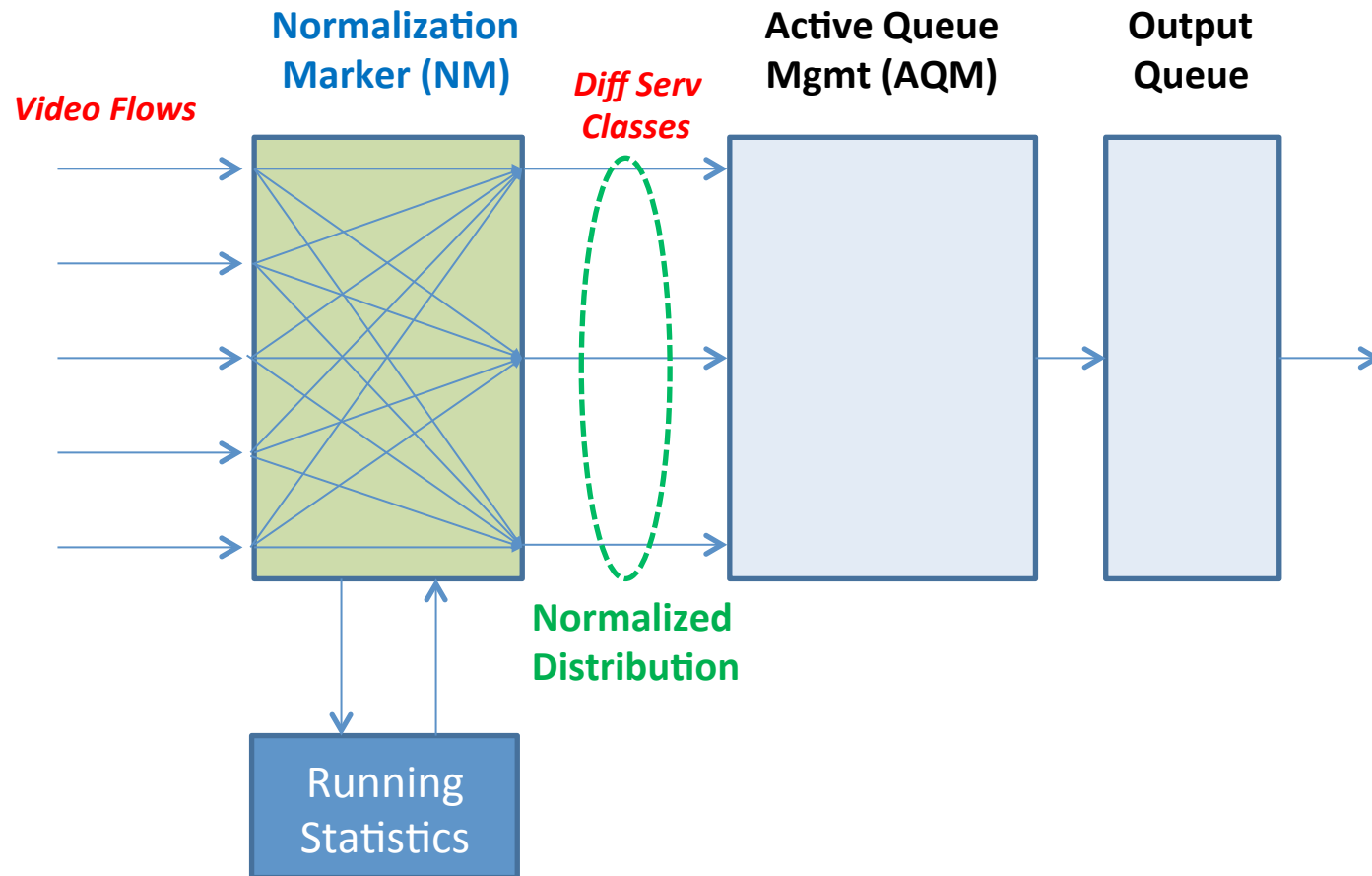
Without normalization marker (NM), different video endpoints had experienced different packet drop rates at congestion.



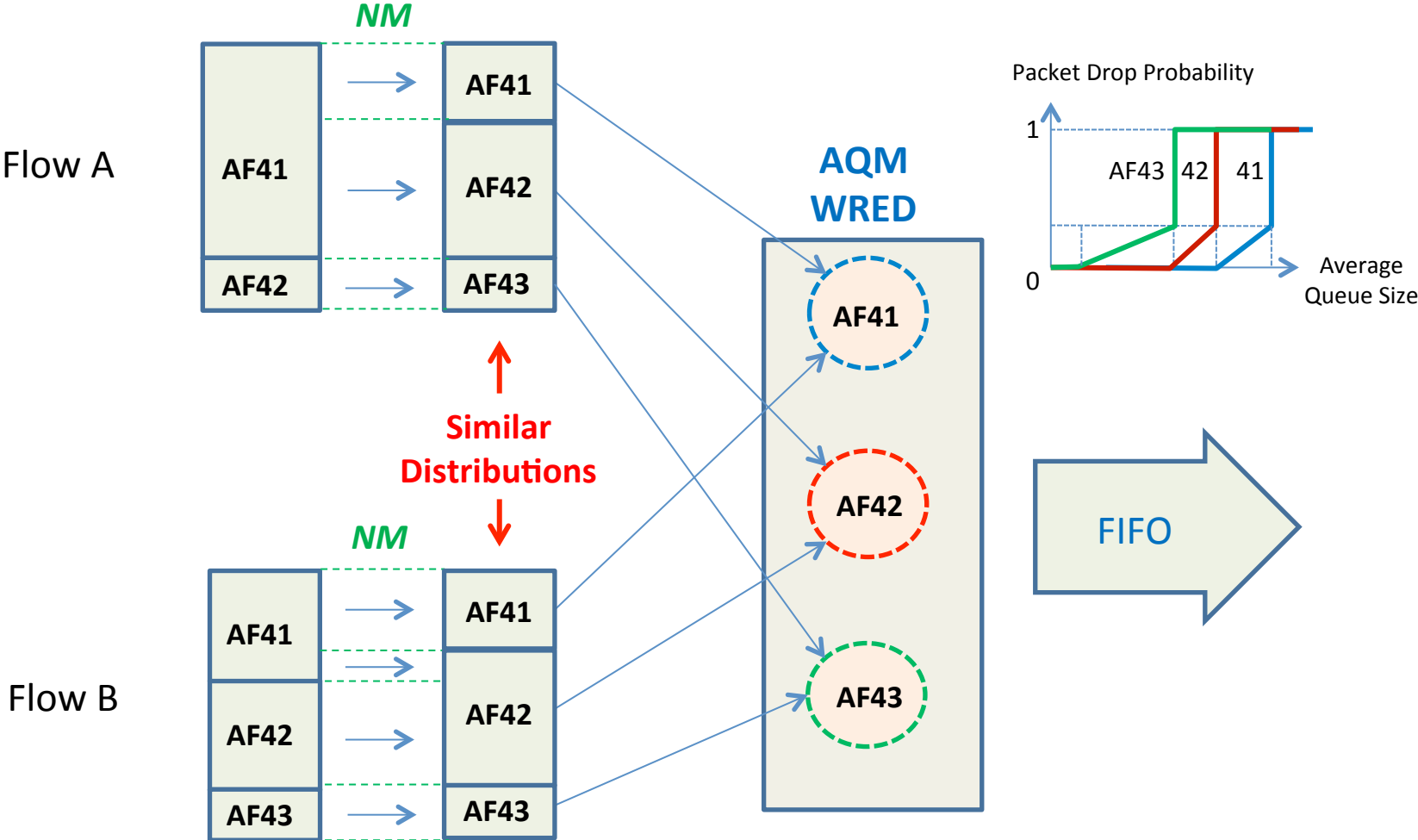
New Incentive for Preferential Drop?

- Video endpoints: “Why should I generate more lower-priority packets?”
 - This behavior is mutually beneficial at congestion.
 - But, whoever does it may suffer if others don't.
- So, the network should offer an incentive.
 - Our proposal is to deploy NM at network edges.
 - This can encourage video endpoints to generate more lower-priority packets (using advanced coding technologies), without fear to lose more packets at congestion.

Normalization Marker (NM) with DiffServ & AQM



Using Normalization Marker (NM) with WRED/AF4x



Implementation by Heuristic Algorithm

- Had implemented 2 heuristic algorithms for NM
 - Based on running statistics; shown effective in empirical results.
- Our intention with this draft is just to specify the functional requirement, instead of the heuristic algorithm here.
 - Perhaps, anyone can come up with a new heuristic algorithm how to implement this NM...?
 - Heuristic algorithms may be discussed elsewhere...?
- Deep Packet Inspection (DPI) / Color-Blind mode needs discussion.
 - Had done implementation with DPI in H.264 AVC NALU header
 - Extensible to DPI in H.264 SVC NALU header
 - Codec/signaling metadata required for accurate/successful DPI
 - Overheads and implementation complexity issues

THANKS FOR COMMENTS