Techniques for Advanced Networking Applications (TANA) BOF

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Active Drafts:

draft-shalunov-tana-problem-statement-00.txt

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Agenda

1. **Agenda Bashing (5 minutes) Chair**
   - Election of scribes
   - Jabber: tsvarea@jabber.ietf.org
2. **Summary of BoF (10 minutes)**
3. **Presentations (80 minutes)**

   TANA Problem Statement - Stanislav Shalunov

   ISP Requirements for TANA - Jason Livingood

   P2P Application Requirements for TANA - Laird Popkin

   Uses of end-to-end Scavenger Service - Marshall Eubanks
4. **Discussion of Way Forward (30 minutes)**
5. **Summary of Current Position (2 minutes)**

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Text

2. Summary

Goals for BoF

Goals:

Examine design space
Identify options
Identify interested parties
Determine if this work is ready to proceed
- If so, prepare way to define a Charter

Non-Goals:

Not addressing updates to DCCP, TCP, SCTP (etc)
Not addressing deployment of ECN (etc)
BoF will not specify a solution

Summary of scope

Applications that transmit large amounts of data for a long time with congestion-limited TCP, but without ECN **fill the buffer at the head of the bottleneck link**.

This increases the delay experienced by other applications. In the best case, with an ideally sized buffer of one RTT, the delay doubles. In some cases, the extra delay may be much larger. This is a **particularly acute and common case when P2P applications upload over thin home uplinks**: delays in these cases can often be of the order of seconds.

The IETF's standard end-to-end transport protocols **have not been designed to minimize the extra delay introduced by them into the network**. TCP, as a side effect of filling the buffer until it experiences drop-tail loss, effectively maximizes the delay. While this works well for applications that are not delay-sensitive, it harms other interactive applications. VoIP and games are particularly affected, but even web browsing may become problematic.

TANA is a transport-area BoF that will focus on **broadly applicable techniques that allow large amounts of data to be consistently transmitted without substantially affecting the delays experienced** by other users and applications.

Proposed work items

(1) A congestion control **algorithm** for **less-than-best-effort "background" transmissions**.

(1a) May include **specifications of how to use algorithm in specific UDP-based protocols**.

(2) A **document that clarifies the current practices of application design** and reasons behind them and discusses the tradeoffs surrounding the use of many concurrent transport connections to one peer and/or to different peers.

- Discussion of these at the end of the BoF.

3. Presentations

4. Discussion

Summary of scope

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Proposed work items

(1) A congestion control algorithm for **less-than-best-effort "background" transmissions**, i.e., an algorithm that attempts to scavenge otherwise idle bandwidth for its transmissions in a way that minimizes interference with regular best-effort traffic. Among the desired features of such an algorithm are the ability to maintain short standing queues, the capability to quickly yield to regular best-effort traffic that uses standard congestion control, the ability to utilize explicit congestion notification (ECN), active queue management (AQM), and/or end-to-end differentiated services (DiffServ) where available, as well as effective operation in today's typical situations where some or all of these mechanisms are not available. In addition to specifying a congestion control algorithm, the work **may also include specifications of how such an algorithm is to be used in specific UDP-based protocols**. (Application of the algorithm to other transport protocols is expected to occur in the working groups that maintain those protocols.)

(2) A **document that clarifies the current practices of application design** and reasons behind them and discusses the tradeoffs surrounding the use of many concurrent transport connections to one peer and/or to different peers. Standard Internet congestion control result in different transport connections sharing bottleneck capacity. When an application uses **several transport connections to transfer through a bottleneck**, it tends to experience larger fraction of the bottleneck's loaded resource than if it had used fewer connections. Note that although capacity is the most commonly considered bottleneck resource, middlebox state table entries are also an important resource for an end system communication. Other resource types may exist, and the guidelines are expected to comprehensively discuss them.

Is there a need for standards in this space?

Is this the problem that should be solved at the IETF?

Are there people interested in working on this topic within the IETF?