An Improved Vegas Algorithm for Enhancing Compatibility with TCP Reno

Presented By
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Reference:

Author: Hua Zhang, Guang Sun and Minghua Liao

Paper Title: An Improved Vegas Algorithm for Enhancing Compatibility with TCP Reno Based on Game Theory.

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The Idea at a glance

- **Identify unfair competition**

- **Make changes in parameters of TCP Reno so that TCP Reno doesn’t take excess bandwidth.**

Files to be modified:

- src/internet/model/tcp-vegas.h
- src/internet/model/tcp-vegas.cc
- /src/internet/model/tcp-reno.h
- /src/internet/model/tcp-vegas.cc

Expected Modifications:

- **Modify the built-in tcp-vegas algorithm as described in the paper**

```
Initial();
Win=min(cwnd,awin),cwnd=1,ssthresh=64k,
tcwnd<ssthresh=0;
If (tcwnd<ssthresh<T)
  Update the value of tcwnd<ssthresh;
  Expected=cwnd/BaseRTT;
  Actual=cwnd/RTT;
  Diff=expected-actual;
  If (Diff<α/BaseRTT)
Cwnd(t+1)=cwnd(t)+1;
Else if (α/BaseRTT<Diff<β/BaseRTT)
  Cwnd(t+1)=cwnd(t);
Else if (Diff>β/BaseRTT)
  Cwnd(t+1)=cwnd(t)-1;
Else
 If (cwnd<ssthresh)
  Cwnd=cwnd+1;
Else
  Cwnd=cwnd+1/cwnd;
Timeout occurred:
   Ssthresh=max(2,min(cwnd/2,awin));
   Cwnd=1;
   tcwnd<ssthresh=0;
```

Expected Modifications:

- **Modify the built-in tcp-reno algorithm to that it can adapt to situations**

- **However, this is not properly documented in this paper, so we need to find another solution.**