

A Longitudinal Measurement Study of TCP Performance and Behavior in 3G4G Networks Over High Speed Rails

ABSTRACT

While TCP has been extensively studied in static and low speed mobility situations, it has not yet been well explored in high speed mobility scenarios. Given the increasing deployment of high speed transport systems (such as high speed rails), there is an urgent need to understand the performance and behavior of TCP in such high speed mobility environments.

EXISTING SYSTEM

In Existing System only consists either static or low speed mobile scenarios. The performance and behavior of TCP in high speed (>200 km/h) mobility cases has not yet been well studied. In the last few years, we have seen a significant worldwide progress in the development of high speed rail (HSR), reaching about 32,000 km at end of 2015. With much higher speeds, it will be more challenging for networks to adapt to highly varying mobile environments. Therefore, it is important to have a comprehensive study on the effect of HSR on TCP.

DIS ADVANTAGES

- TCP cannot adapt well to high speed environments.
- Long delay of connection establishment, closure and transmission interruption.

PROPOSED SYSTEM

In Proposed System, we conduct a comprehensive study to investigate the performance and behavior of TCP in a high speed environment with a peak speed of 310 km/h. Over a 16-month period spanning four years, we collect 500 GB of performance data on 3/4G networks in high speed trains in China, covering a distance of 108,490 km. We start by analyzing performance metrics, such as RTT, packet loss rate, and throughput. We then evaluate the challenges posed on the main TCP operations (establishment, transmission, congestion control, flow control, and termination) by such high speed mobility. This paper shows that RTT and packet loss rate increase significantly and throughput drops considerably in high speed

situations. Moreover, TCP fails to adapt well to such extremely high speed leading to abnormal behavior, such as high spurious retransmission time out rate, aggressive congestion window reduction, long delays during connection establishment and closure, and transmission interruption. As we prepare to move into the era of 5G, and as the need for high speed travel continues to increase, our findings indicate a critical need for efforts to develop more adaptive transport protocols for such high speed environments.

ADVANTAGES

- It reduces the packet loss rate.
- Improves network coverage and capability for stationary.

SYSTEM REQUIREMENTS

H/W System Configuration:-

Processor	-	Pentium –III
RAM	-	256 MB (min)
Hard Disk	-	20 GB
Key Board	-	Standard Windows Keyboard
Mouse	-	Two or Three Button Mouse
Monitor	-	SVGA

S/W System Configuration:-

Operating System	:	Windows95/98/2000/XP
Application Server	:	Tomcat5.0/6.X
Front End	:	HTML, Jsp
Scripts	:	JavaScript.
Server side Script	:	Java Server Pages.
Database	:	MySQL 5.0

Database Connectivity : JDBC

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