

Performance Metrics for Web Browsing

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Motivation

- Web browsing is a basic internet service, with a large population of users and proportion of traffic
- Understanding web browsing performance benefits both ISPs and ICPs
- There is a lack of standard metrics to measure such performance; this I-D intends to add metrics for web browsing to the set of IPPM

Metric for host connection

- Host Connection Delay
 - Time required to create a TCP connection to the web server (including possible SSL handshake process)
 - Measured in seconds: either a real number, or an undefined (informally, infinite) number of seconds

Metrics for web element loading (1)

- Element Request Delay
 - Time required to send the HTTP request message to the server
 - Measured in seconds
 - From: sending of the HTTP request message starts; to: sending finishes
 - Depend on the amount of data sent to the server

Metrics for web element loading (2)

- Element Waiting Delay
 - Idle time spent waiting for a response message from the server
 - Measured in seconds
 - From: sending of the HTTP request message is finished; to: the first byte of the HTTP response message is received
 - Depend on network latency and web server process time

Metrics for web element loading (3)

- Element Receiving Delay
 - Time taken to read the HTTP response message from the web server
 - Measured in seconds
 - From: the first byte of the HTTP response message is received; to: receiving the HTTP response message is finished
 - Depend on the size of the content returned and network speed

Metrics for web element loading (4)

- Element Loading Success
 - The result of the HTTP transaction to load a web page element
 - Either a one (signifying successful loading of the element) or a zero (signifying unsuccessful loading of the element)
 - 1: the Element Request Delay, Element Waiting Delay and Element Receiving Delay are all a finite value; 0: any of the Element Request Delay, Element Waiting Delay and Element Receiving Delay is undefined

Metrics for web page loading (1)

- Web Page TTFB (Time To First Byte)
 - Time needed to receive the first byte from the web server when loading a web page
 - Measured in seconds
 - From: sending of the first HTTP request message is started; to the first byte of the first HTTP response message is received

Metrics for web page loading (2)

- Web Page Loading Time
 - Time needed to receive all the elements from the web server when loading a web page
 - Measured in seconds
 - From: starting to send the first HTTP request message; to: finishing receiving the last HTTP response message.

Next step

- Invite comments
- Request for WG adoption