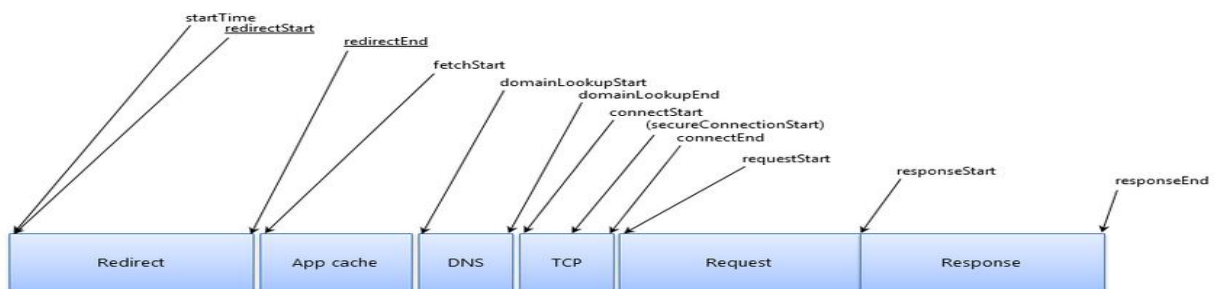


Test Procedure:

As part the HTTP test, the following tests are executed in sequence to get the KPIs.

1. DNS test is performed to calculate the DNS time as the value extracted from the browser is not reliable
2. TCP test is performed to calculate the TCP connection time as the value extracted from the browser is not reliable (It will do another DNS test as part of this test)
3. URL is opened in the browser which will do following:
 - a. DNS Resolution is performed
 - b. TCP connection is established
 - c. Secure connection is established if it is HTTPS
 - d. Page Resources are downloaded and painted on the browser page

Detailed Explanation:



- **DNS_RESOLVE_TIME:** Time to Resolve DNS

This is captured from the **first** DNS test. Time between DNS Query request to DNS Query response

In PCAP, this test starts at first DNS Request and contains DNS Response Packet.

- **SOCKET_CONNECT_TIME:** Time for Successful TCP connection

This is captured from the TCP test. Time between TCP SYN to TCP ACK

In PCAP, this test starts at **second** DNS request and contains DNS Response, TCP connection, Secure Connection (HTTPS) and HTML page download (Encrypted).

In HTTP GET Test, only SOCKET_CONNECT_TIME is extracted. In case of HTTP HEAD test, SOCKET_CONNECT_TIME and the HTTP_DL_PAGE_TTFB is also extracted.

84	*REF*	10.70.102.250	8.8.8.8	DNS	84 Standard query 0xc899 A www.yahoo.com OPT	
85	0.008121	8.8.8.8	10.70.102.250	DNS	182 Standard query response 0xc899 A www.yahoo.	⇒ DNS_RESOLVE_TIME
87	0.042558	10.70.102.250	8.8.8.8	DNS	73 Standard query 0x0a60 A www.yahoo.com	
88	0.050349	8.8.8.8	10.70.102.250	DNS	171 Standard query response 0x0a60 A www.yahoo.	
89	0.066473	10.70.102.250	98.138.219.232	TCP	74 55030 → 443 [SYN] Seq=0 Win=27200 Len=0 MSS	
90	0.106375	98.138.219.232	10.70.102.250	TCP	74 443 → 55030 [SYN, ACK] Seq=0 Ack=1 Win=1448	
91	0.106994	10.70.102.250	98.138.219.232	TCP	66 55030 → 443 [ACK] Seq=1 Ack=1 Win=27392 Len=	⇒ SOCKET_CONNECT_TIME

HTTP_DL_PAGE_TTFB: Time to First Byte of First HTML page

This is captured from the HTTP test. Time between First HTTP Request to HTTP Response (If the response is segmented, then the first segment is used in calculations)

In PCAP, this test starts from **third** DNS Request and contains DNS Response, TCP connection, Secure Connection (HTTPS) and Full-Page download with all the resources.

If the connection is secure (HTTPS), it is not possible to decrypt the packet, so we can set the “Change Cipher Spec, Encrypted Handshake Message” as the reference which is close to the HTTP Request Time.

588	*REF*	10.70.102.250	98.138.219.231	TLSv1.2	192 Client Key Exchange, Change Cipher Spec	
589	0.000381	10.70.102.250	98.138.219.231	TLSv1.2	159 Application Data	
590	0.000553	10.70.102.250	98.138.219.231	TLSv1.2	361 Application Data	
591	0.037479	98.138.219.231	10.70.102.250	TLSv1.2	340 New Session Ticket, Change Cipher Spec,	
592	0.038198	10.70.102.250	98.138.219.231	TCP	66 51750 → 443 [ACK] Seq=1032 Ack=4237 Win	
593	0.047050	98.138.219.231	10.70.102.250	TLSv1.2	104 Application Data	
594	0.047050	98.138.219.231	10.70.102.250	TLSv1.2	116 Application Data	
595	0.047050	98.138.219.231	10.70.102.250	TLSv1.2	108 Application Data	
596	0.048572	10.70.102.250	98.138.219.231	TCP	66 51750 → 443 [ACK] Seq=1032 Ack=4275 Win	
597	0.048714	10.70.102.250	98.138.219.231	TLSv1.2	104 Application Data	
598	0.048849	10.70.102.250	98.138.219.231	TCP	66 51750 → 443 [ACK] Seq=1070 Ack=4367 Win	
599	0.069558	98.138.219.231	10.70.102.250	TLSv1.2	104 Application Data	
600	0.069686	98.138.219.231	10.70.102.250	TLSv1.2	1395 Application Data	⇒ HTTP_DL_PAGE_TTFB

HTTP Iterations 1			1
HTTP Status 1			SUCCESS
HTTP URL 1			https://www.yahoo...
HTTP Resource Download Bytes 1			2014366
HTTP Resource Download Time 1			94.195 s
HTTP Page Load Time 1			3.499 s
HTTP Page TTFB Time 1			70.52 ms
HTTP Max Resource TTFB Time 1			461.525 ms
HTTP Total Resource TTFB Time 1			4.975 s
HTTP Page HTML Bytes 1			379886
HTTP Resource Count 1			158
HTTP DNS Time 1			9 ms
HTTP TCP Time 1			41 ms

KPI NAME	DESCRIPTION
HTTP Resource Download Bytes	Total bytes downloaded for all the resources on the page requested
HTTP Resource Download Time	Sum of the download time of all the resources on the page requested
HTTP Page Load Time	Time taken to load the web page with all the resources
HTTP Page TTFB	Time between first HTTP Request and first byte of the HTTP Response
HTTP Max Resource TTFB	Max TTFB of all the HTTP Resources
HTTP Total Resource TTFB	Sum of the TTFB time of all the resources on the page requested
HTTP Page HTML Bytes	Total bytes downloaded for the first HTML page
HTTP Resource Count	Total number of resources downloaded on the page requested
HTTP DNS Time	Time taken to resolve the URL
HTTP TCP Time	Time taken to establish a TCP connection. (TCP ACK time – TCP SYN time)

Note: The measurements reported in the landslide GUI for external apps include the latency of Inter-module communication.