

Capport ICMP

Evolving Captive Portal and
Walled Garden Network Notification

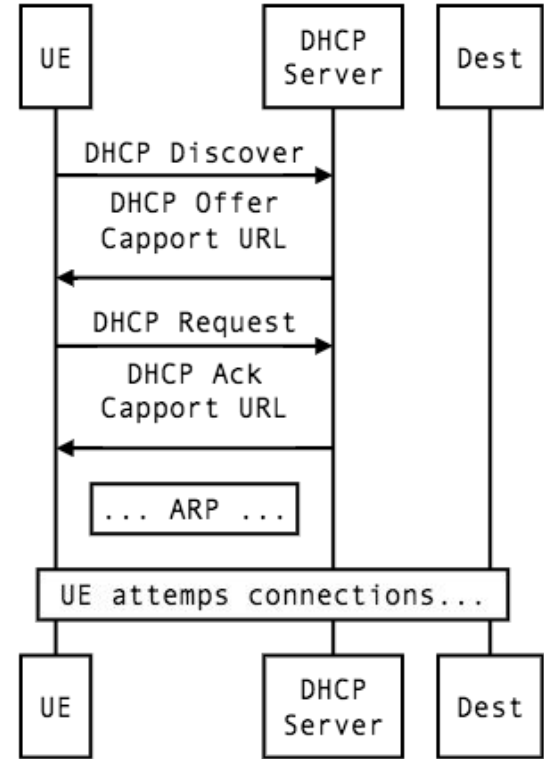
<https://tools.ietf.org/html/draft-wkumari-capport-icmp-unreach-02>

Capport URL Discovery

From DHCP (or ICMPv6 RA) the Capport compliant UE discovers the Capport URL

Legacy UE: Ignored

Capport UE: Retains Capport URL and expects to receive Capport ICMP

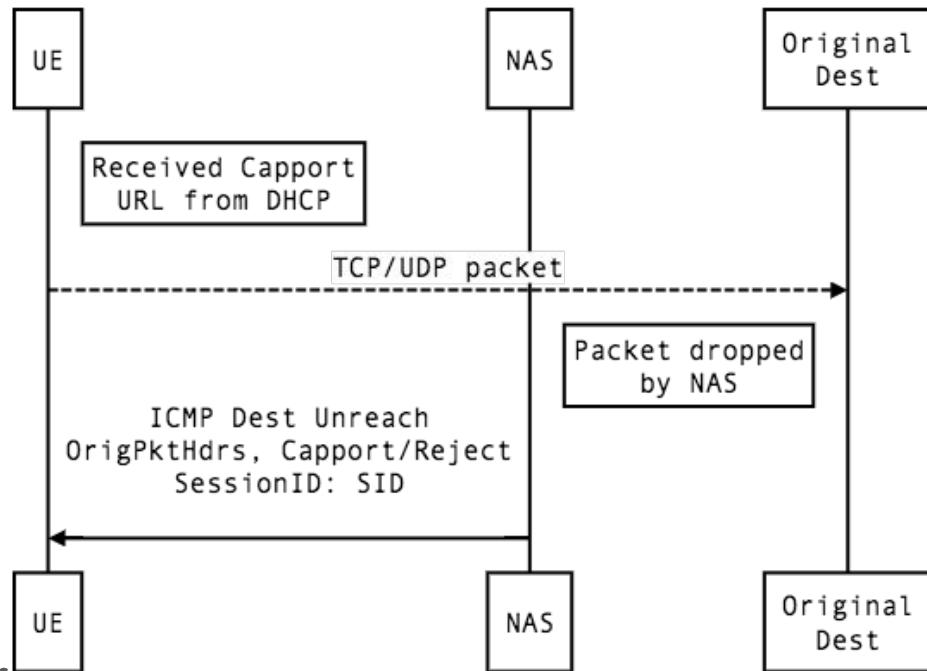


Rejected Traffic

When the NAS is asked to forward traffic not in the walled garden, it will drop the packet and return an ICMP error

Legacy UE: Received ICMP Dest Unreach

Capport UE: Received ICMP Dest Unreach, “Portal interaction required” user notification

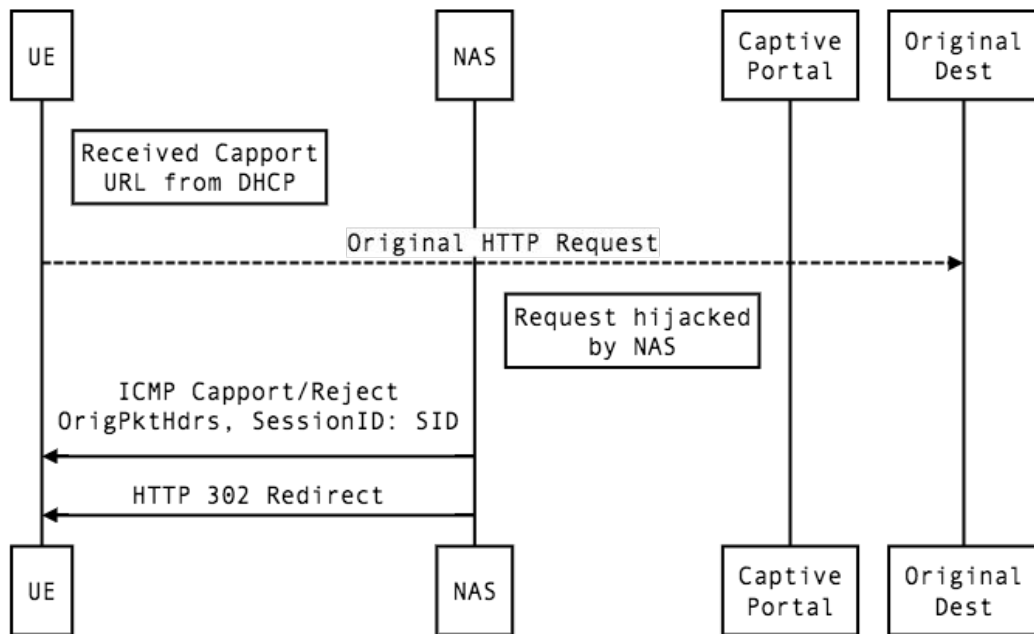


HTTP Hijacking

When the NAS is asked to forward traffic not in the walled garden, it will drop the packet and return an ICMP error

Legacy UE: 302 Redirect

Capport UE: Received Capport ICMP, “Portal interaction required” user notification

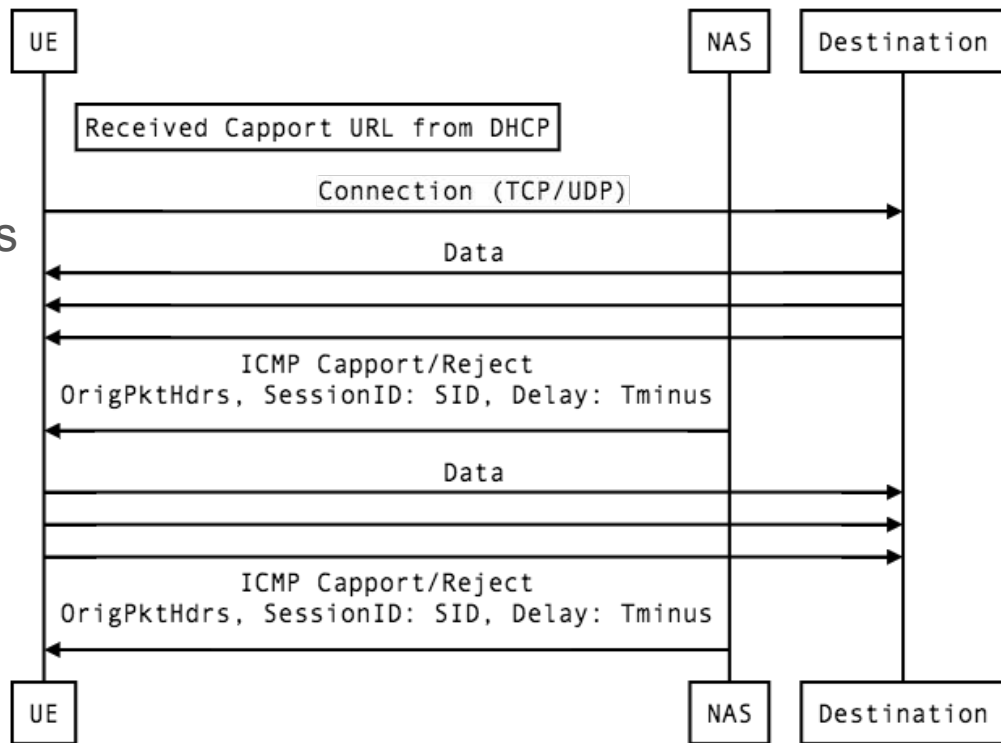


Session Warning

A session may end for several reasons including time or data limitations that are approaching. The NAS indicates the pending change in authorization using Capport ICMP with Delay set.

Legacy UE: Ignored

Capport UE: “Portal interaction suggested” user notification

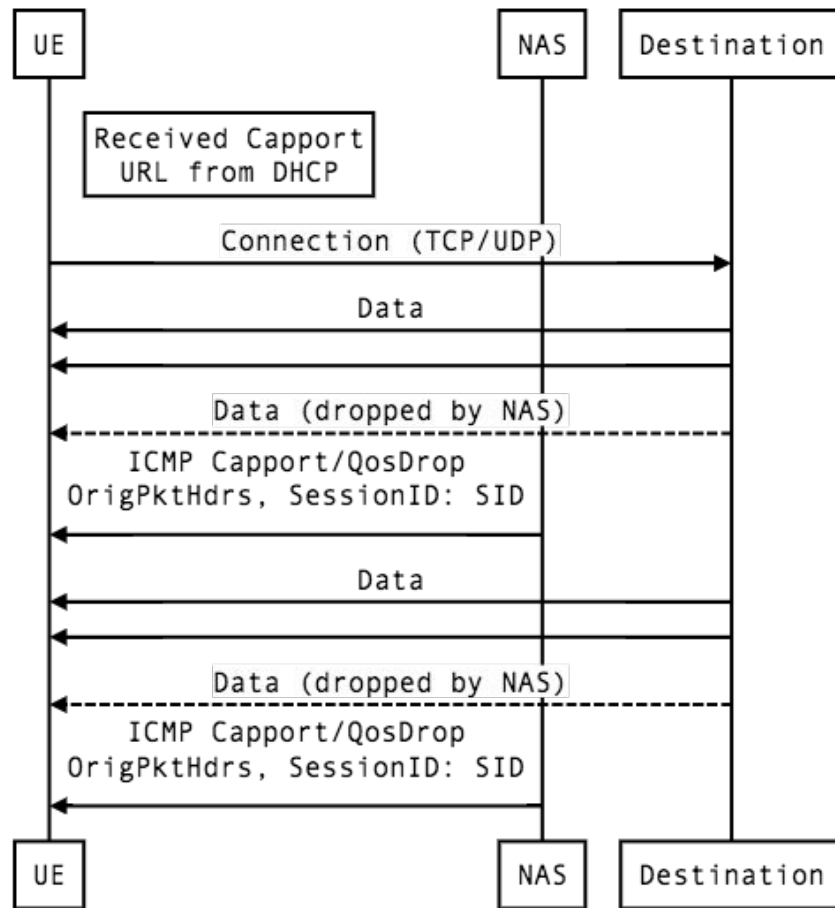


Qos Rate Limit Warning

A session may not be captive, but subject to rate limiting. In this case, the NAS will send Capport ICMP QosDrop warnings to the UE indicating the flow being rate limited (by quoting headers)

Legacy UE: Ignored

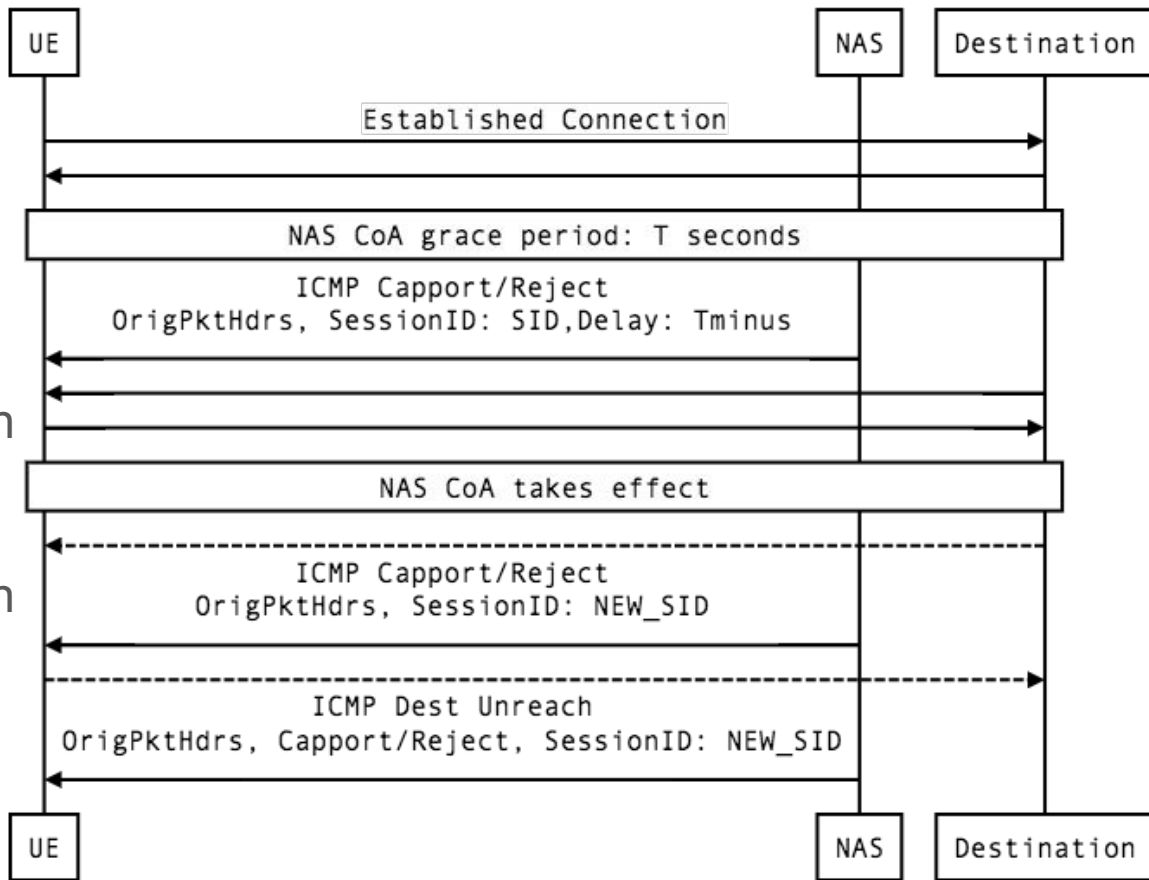
Capport UE: “Portal interaction suggested” user notification



Terminating Connections

Legacy UE: Ignores Cappid and learns of connection failure from ICMP Dest Unreach

Cappid UE: Warned about the pending CoA: “Portal interaction suggested” user notification.
After CoA: “Portal interaction required” user notification

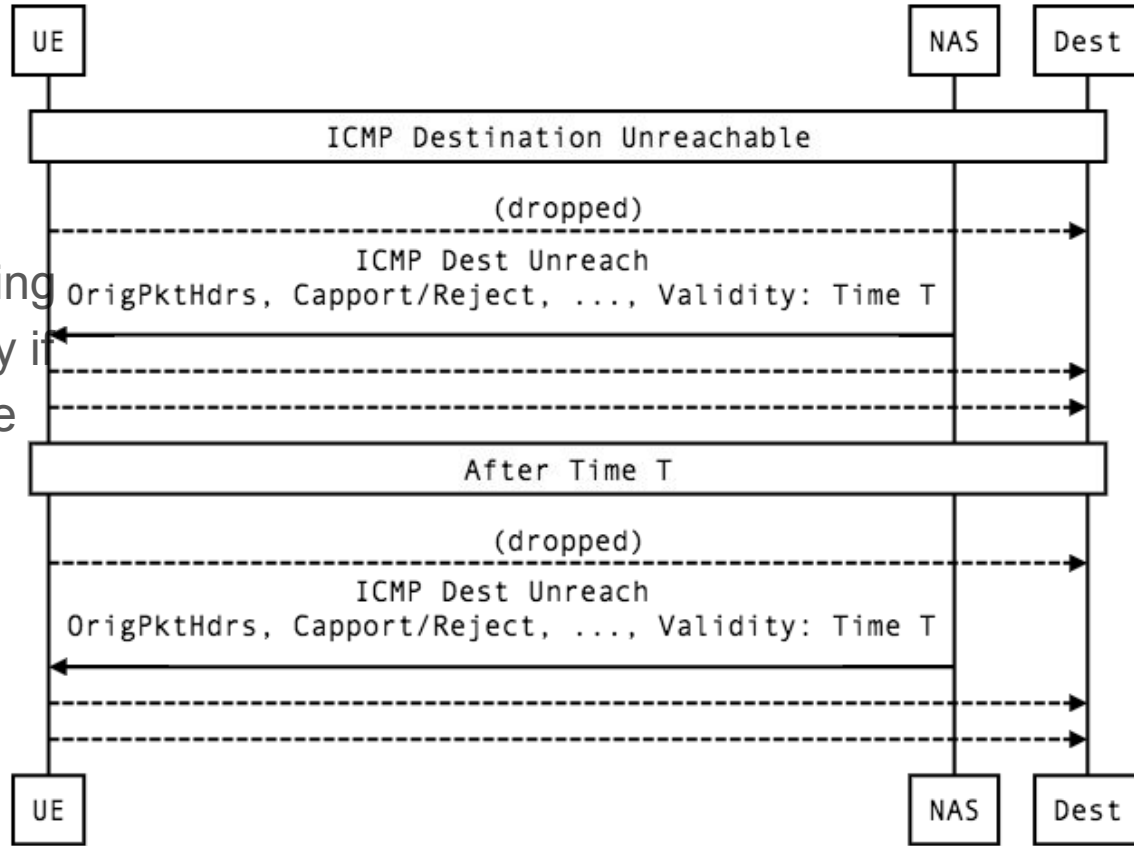


Throttling ICMP Packets

Responding to every packet being dropped is gratuitous, especially if clients keep asking for the same tuple.

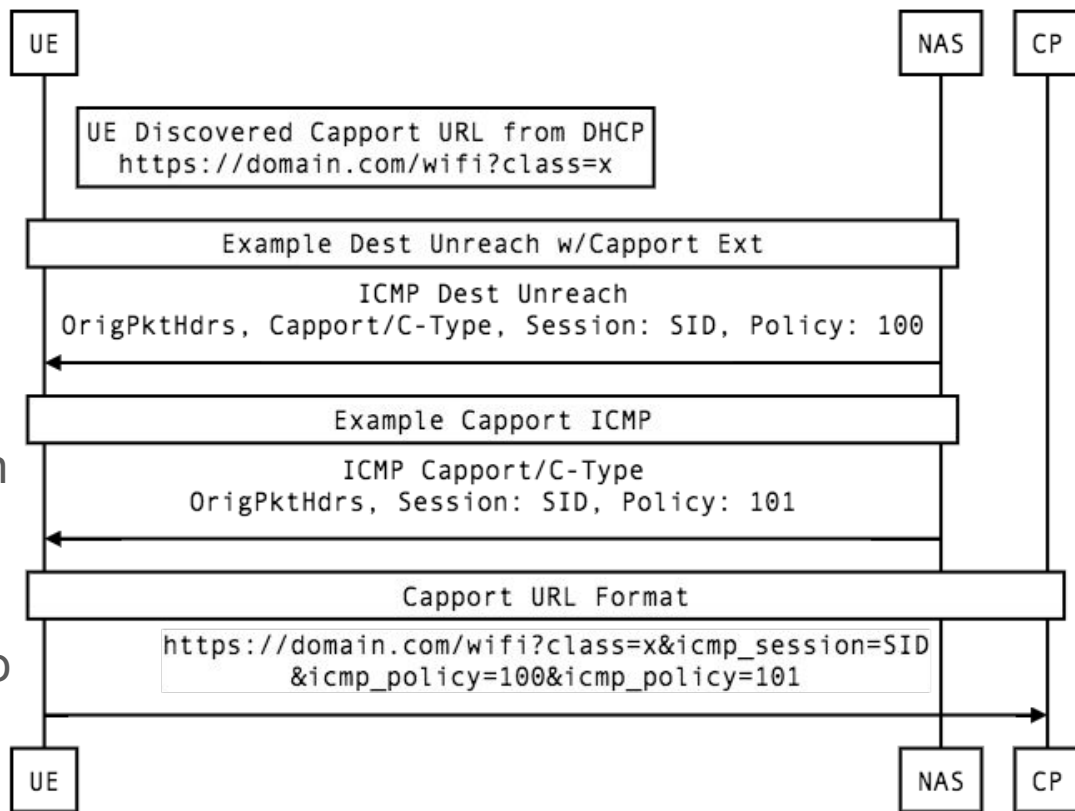
Legacy UE: Some connections will fail quickly, others timeout

Capport UE: Knows similar packets will be silently dropped during Time T



Capport URL Formatting

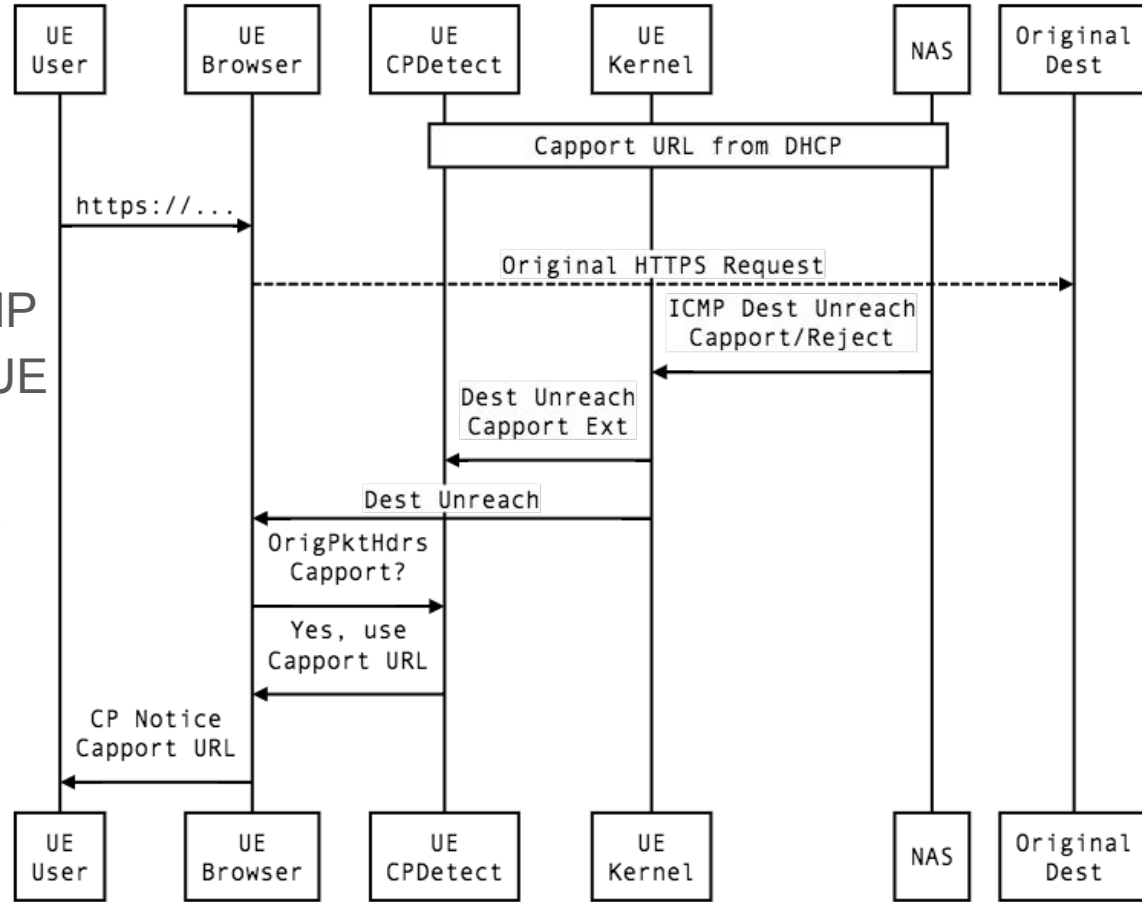
The Capport URL will be augmented with information gathered from the Capport ICMP. The portal may use this information for increased confidence the client is on a legitimate network. The portal may also be given hints as to what rule or policy causes the notification



Solving the HTTPS Problem

An example of how Capport ICMP can be used by a browser on a UE that is Capport aware (without direct kernel support for Capport ICMP)

Note that the Capport UE may also be doing Capport Detection and providing additional notifications



UE Cappid Detection

The Cappid UE is able to detect captive portals on a per flow basis. As such, it is suggested the UE does NOT perform any active captive portal detection, rather instead wait passively for notification

