CAPPORT
IETF98 Hackathon
The Problem

- Captive Portals Suck
- Give all clients a consistent api/workflow to interact with captive portals
- Minimize bad behaviour like hijacking https/man in the middle/etc
- Improve security
Planning

• Used architecture draft to guide at a high level
•Communicated over email ahead of time
•Used slack at hackathon to coordinate
What did we work with

- RFC 7710
- Coova Chilli  https://github.com/coova/coova-chilli
- Flask (restful api framework)
- Wireshark (extended to read the new icmp messages)
- Tcpdump (extended to read the new icmp messages)
Achievements

• Achieved repeatable, automatic login to captive portal
• Extended tcpdump to support new icmp messages
• Extended wireshark to support new icmp messages
• Feedback for working group
How it works

• Coova-chilli
  – provides DHCP and captive portal
  – Sends ICMP Unreach with capport extension if blocked
  – Sends new ICMP Captive Portal Message to notify of throttling/etc

• Icmpd
  – Uses raw socket to get icmp
  – Spawns a python script to invoke login functionality of API automatically
  – IP hardcoded (should come from DCHP/RA-- RFC 7710)

• CAPPORT API Server
  – Provides REST interface to login/logout from captive portal
  – Calls coova-chilli CLI commands

• DHCP
  – Know how to do it client side (description on capport98 github)
How it works

UE → DHCP
  DHCP Discover/Request
  DHCP Offer/Ack (with RFC7710 URL)

Original HTTPS Request (blocked)

ICMP (Dest Unreach)

API (get requirements)

REST Interactions

Allow

Proceed

Original Request

UE → DHCP → CP/NAS → API → Website

ICMP (Cappor QoS Warning)
Where to find the work

• Coova chilli: https://github.com/coova/coova-chilli
• Icmpd and DHCP: https://github.com/klarose/capport_98
• REST API: https://github.com/darshakthakore/capport-detection
• Wireshark: https://code.wireshark.org/review/#/c/20584/1
• Tcpdump: https://github.com/ThreadedThinking/tcpdump
Who did it?

• Kyle Larose (Sandvine)
• David Bird (Google)
• Darshak (Cablelabs)
• Alex Roscoe (Comcast)
• Remote:
  – Dave Dolson (Sandvine)
  – Alexis La Goulette
  – Vincent van Dam (Sandvine)
What did we find?

- Lots of discussion about:
  - Scope of API
  - Desired behaviour for different components
  - Security
  - Simplicity of solution
  - Usecases
- Identified real things to address in the WG