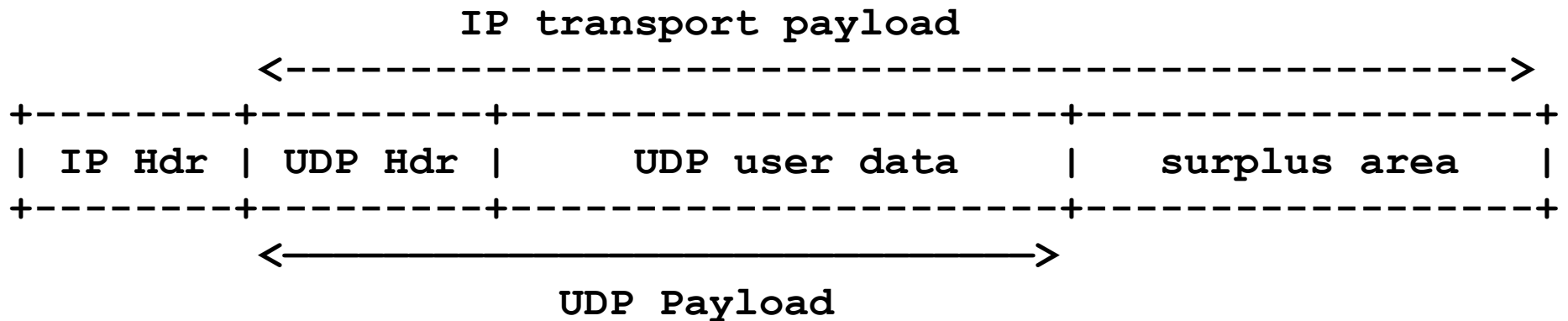


Progress on UDP Options Implementation

Gorry Fairhurst, Tom Jones
TSVWG

*@erg.abdn.ac.uk

UDP Option Area



RFC793

Implementation in FreeBSD

0*	-	End of Options List (EOL)	- Implemented
1*	-	No operation (NOP)	- Implemented
2*	2	Option checksum (OCS)	- Implemented (CCO?)
5*	4	Maximum segment size (MSS)	- Implemented
7	10	Timestamps (TIME)	- Implemented

Added:

9	6	Request (REQ)	- Implemented
10	6	Response (RES)	- Implemented

To do:

3*	4	Alternate checksum (ACS)	- Not yet implemented
----	---	--------------------------	-----------------------

Receiver has to know to use this.

We need to agree on CRC Algorithm (does not conflict with the CCO).

Implementation Topics

4* 4 Lite (LITE)

LITE - Specification for LITE is complicated, but possible.

.. If there is a mistake in the implementation or a change to this in future, then it will mangle everything in the option space.

6* 8/10 Fragmentation (FRAG)

FRAG - Support for fragments in transport and network protocols are difficult to handle, partly because of need to consider attack vectors and partly because of need to manage reassembly buffers. It isn't something an endpoint would enable as default.

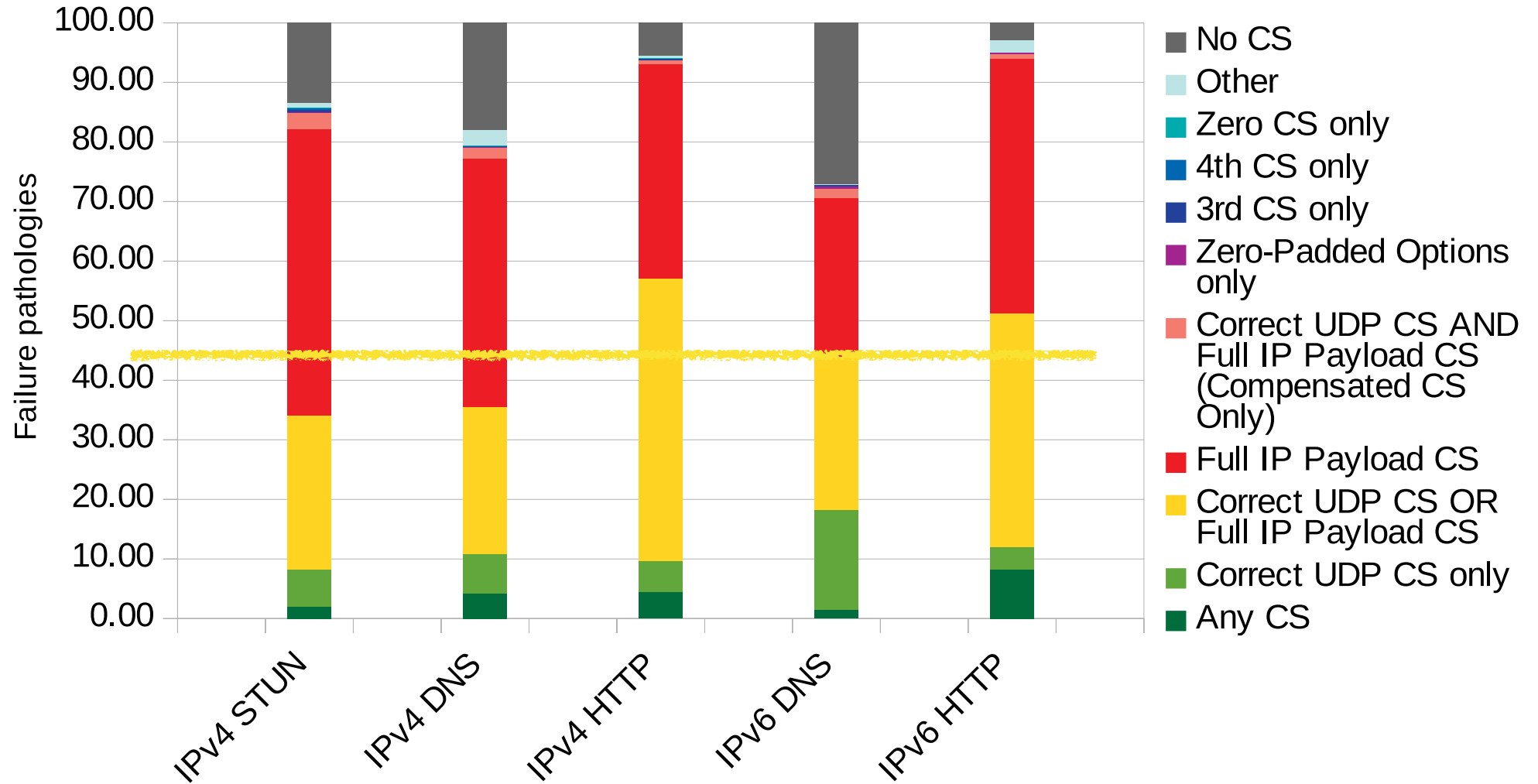
The current spec puts data in the UDP payload, which does not seem correct.

****We**** don't have any current plans to add this ourselves.
Are others implementing?

8 (varies) Authentication and Encryption (AE)

AE - Underspecified?

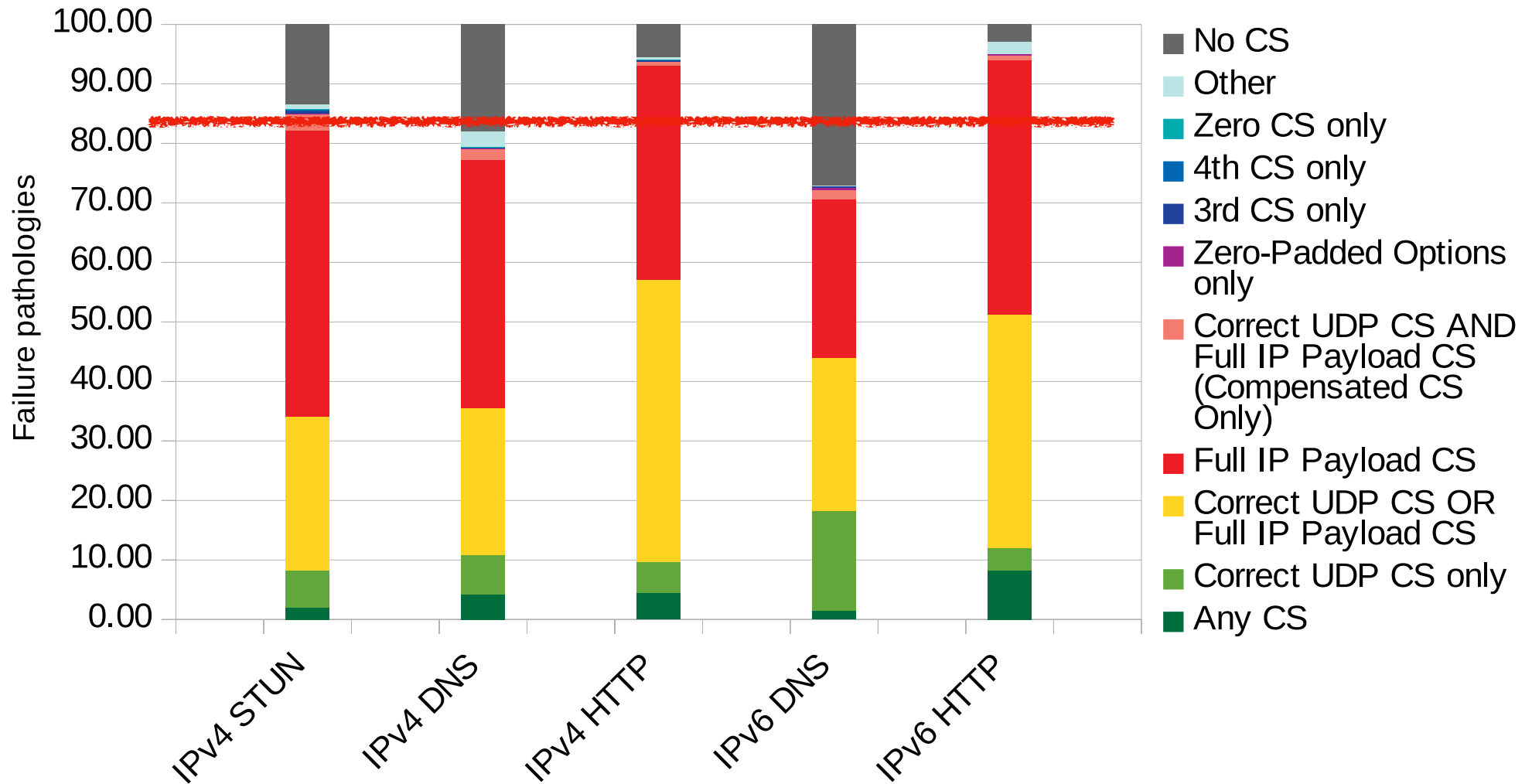
Results (see MAP-RG)



Middlebox Problems

- The magic is in draft-ietf-fairhurst-udp-options-cco
- Most (not all) checksum issues can be fixed by CCO
- Issue: Only passes 0s as options space
- Issue: Only passes IP payload length == UDP Length, our some bizarre checksum method.

CCO helps



The CCO method

CCO could be a direct replacement for the OCS checksum

Should it be an *option* or *always required*?

... Options have an upgrade path to when more of the Internet supports UDP

... Should be required in the header, more efficient.

In our case, it will be the default anyway.

What next?

Looking forward to next revision!

To do:

3*	4	Alternate checksum (ACS)	- Not yet implemented
2*	2	Option checksum (OCS)	- Implement CCO

This work is partially supported by the European Commission under Horizon 2020 grant agreement no. 688421 Measurement and Architecture for a Middleboxed Internet (MAMI).