

TRAM

**Differentiated priorities and Status Code-points Using Stun Signalling
(DISCUSS)**

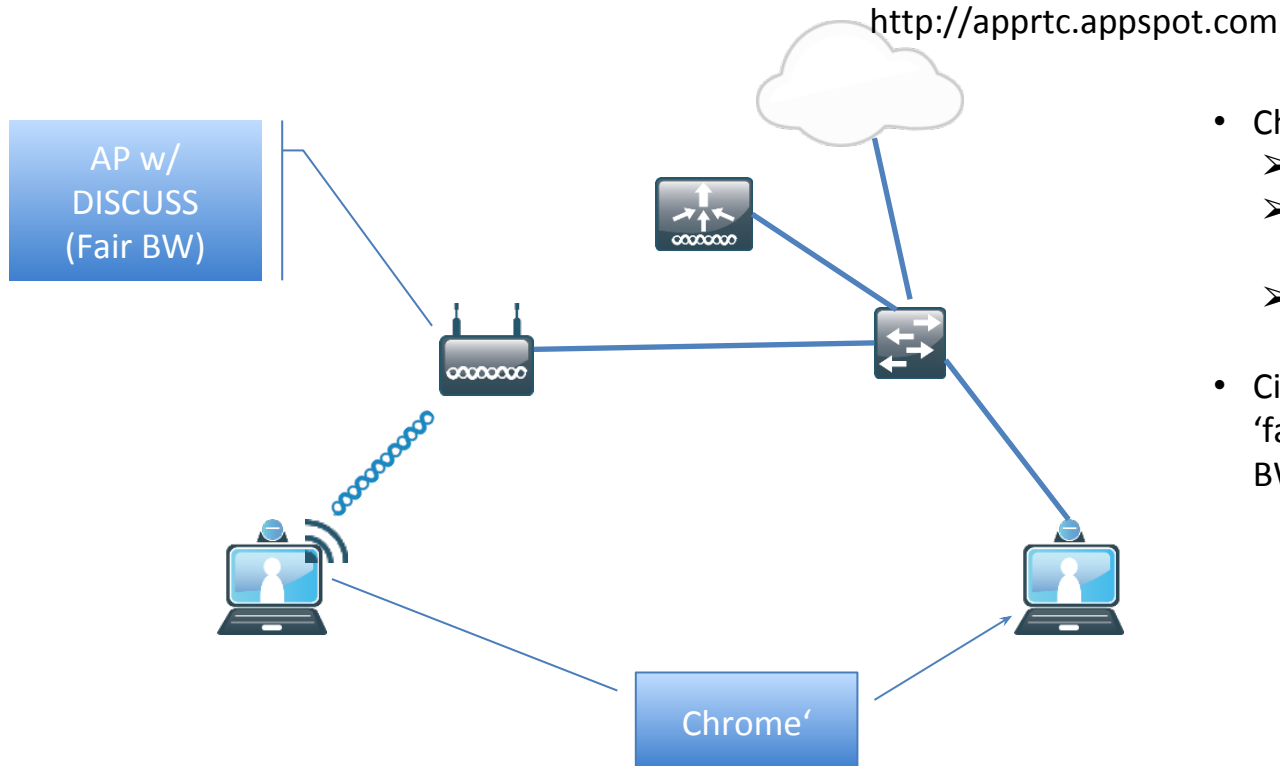
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Authors: Pål-Erik Martinsen, Herb Wildfeuer

Presenter : Pål-Erik Martinsen

Hackathon Setup



draft-martinsen-tram-discuss-02

- Chrome browser modified:
 - Support DISCUSS BW attribute
 - Use network attribute for video BW selection
 - ~ 10 lines of code total
- Cisco AP w/ modifications to support 'fair' BW algorithm (divides available BW between all flows).

3 Use Cases

- Bandwidth Hints and Down-speeding
- Up-Speeding with Confidence
- First Come, First Serve CaC

Bandwidth Hints and Down-speeding

- Network can provide hints on available bandwidth
 - Easier slow start and call rate should converge quicker.
- Hints from network when to down-speed
 - Works well for large sudden drops in available bandwidth
 - No need for application to guess what is going on
 - Possible to give a better end-user experience with better feedback

Up-Speeding with Confidence

- Provide faster up speeding by telling application that network conditions have improved
- Can up-speed faster and in larger steps

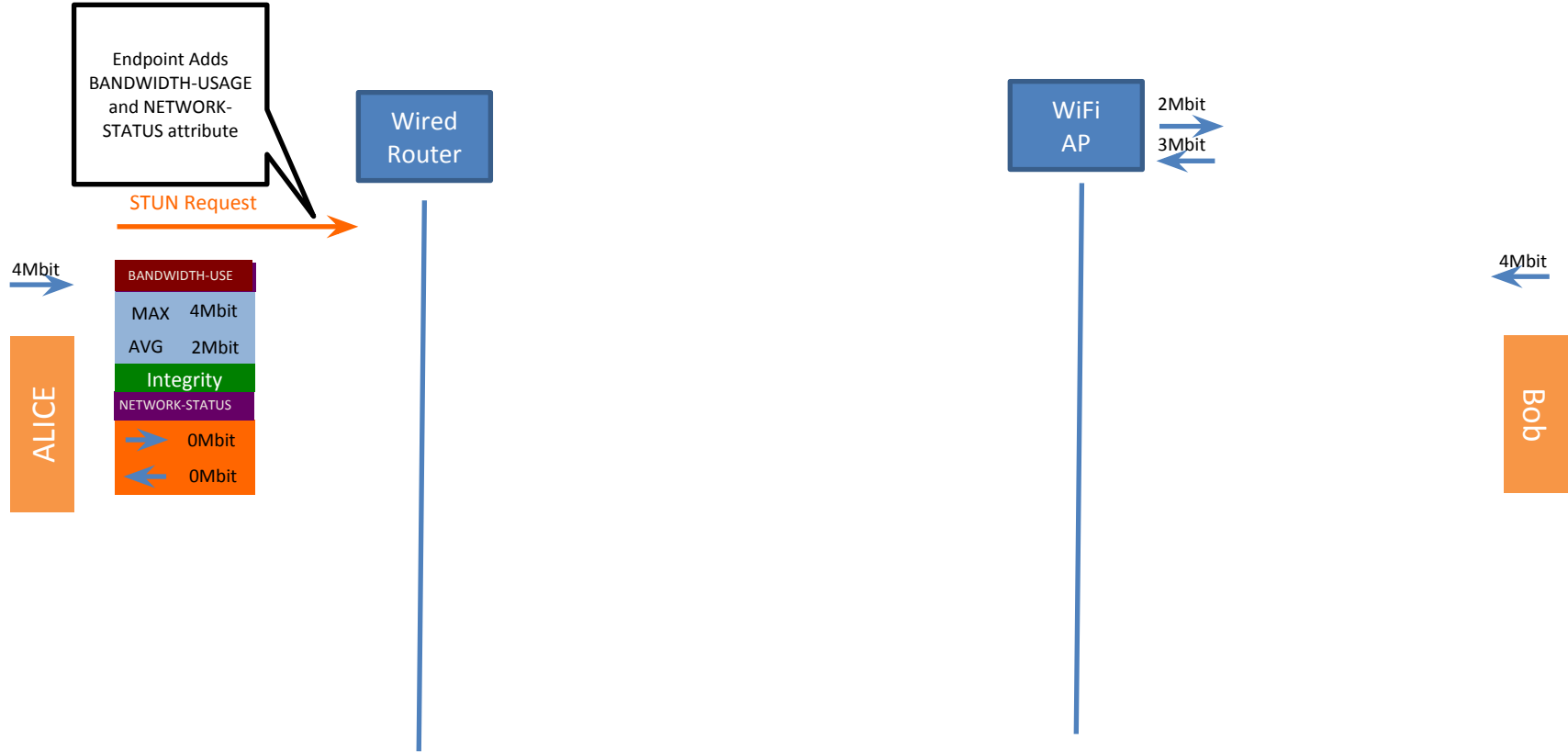
First Come, First Serve CaC

- Prevents new flows to deteriorate existing flows
- Application can still send flow but will be treated in a worse than best effort queue.
- Application will be notified when bandwidth is available.
(Some sort of queuing if more applications are waiting)

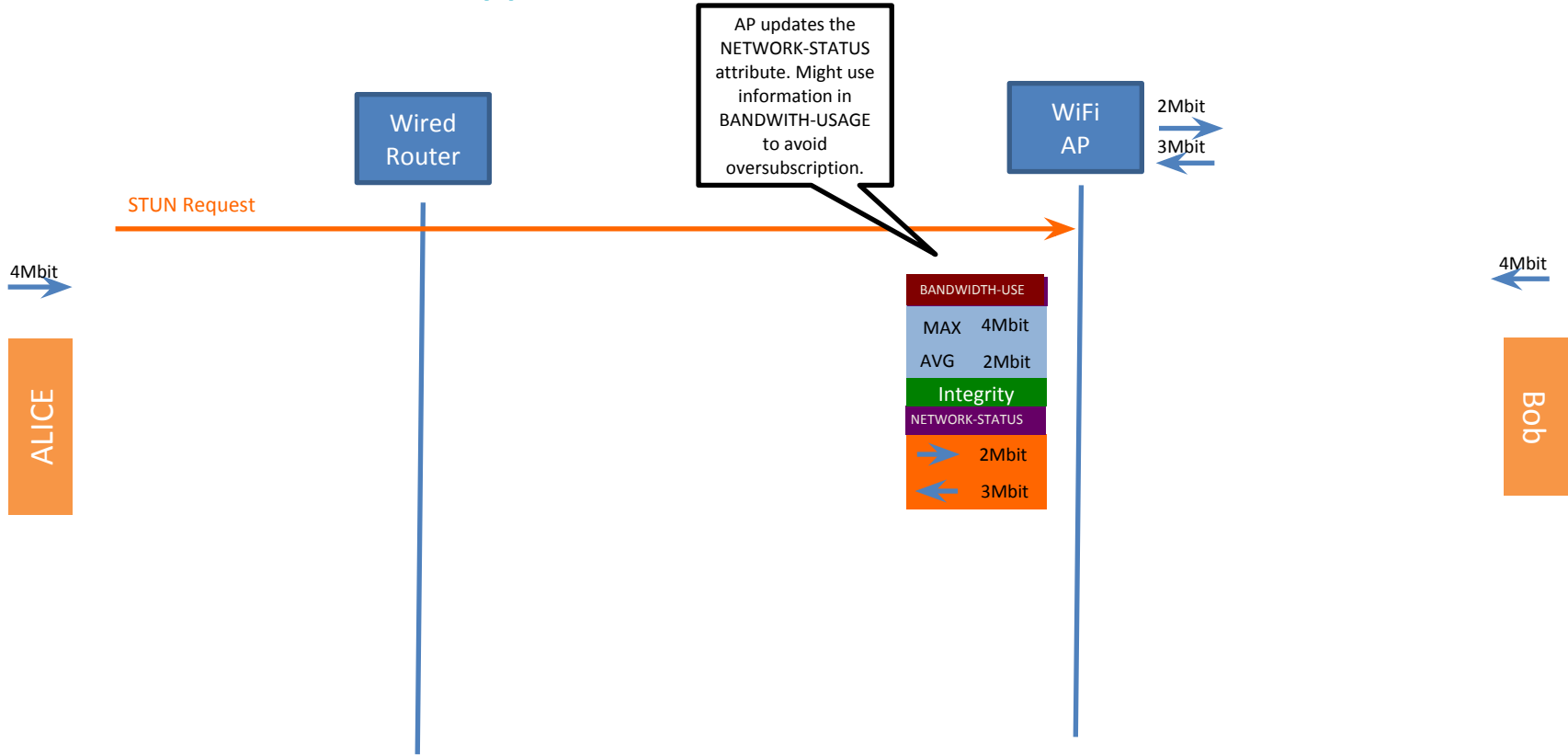
Replace Rate-adaption Mechanisms?

- Delay sensing and other mechanism still needed
- Solution will help build better and more robust rata adaption
- A mix of rate adaption, STUN based end-end and ICMP based solutions will help make the transition smoother as this is already deployed solutions.

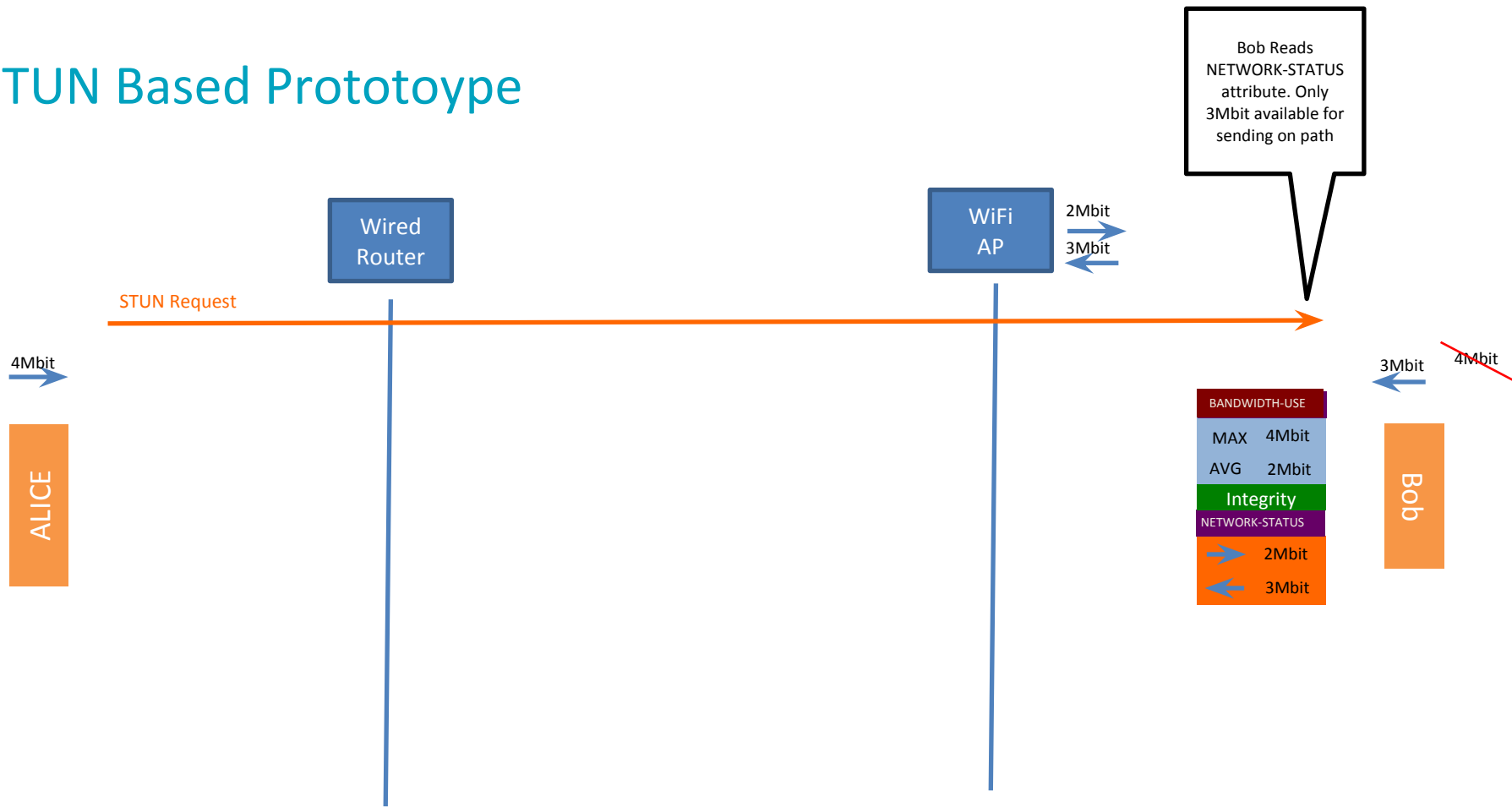
STUN Based Prototype



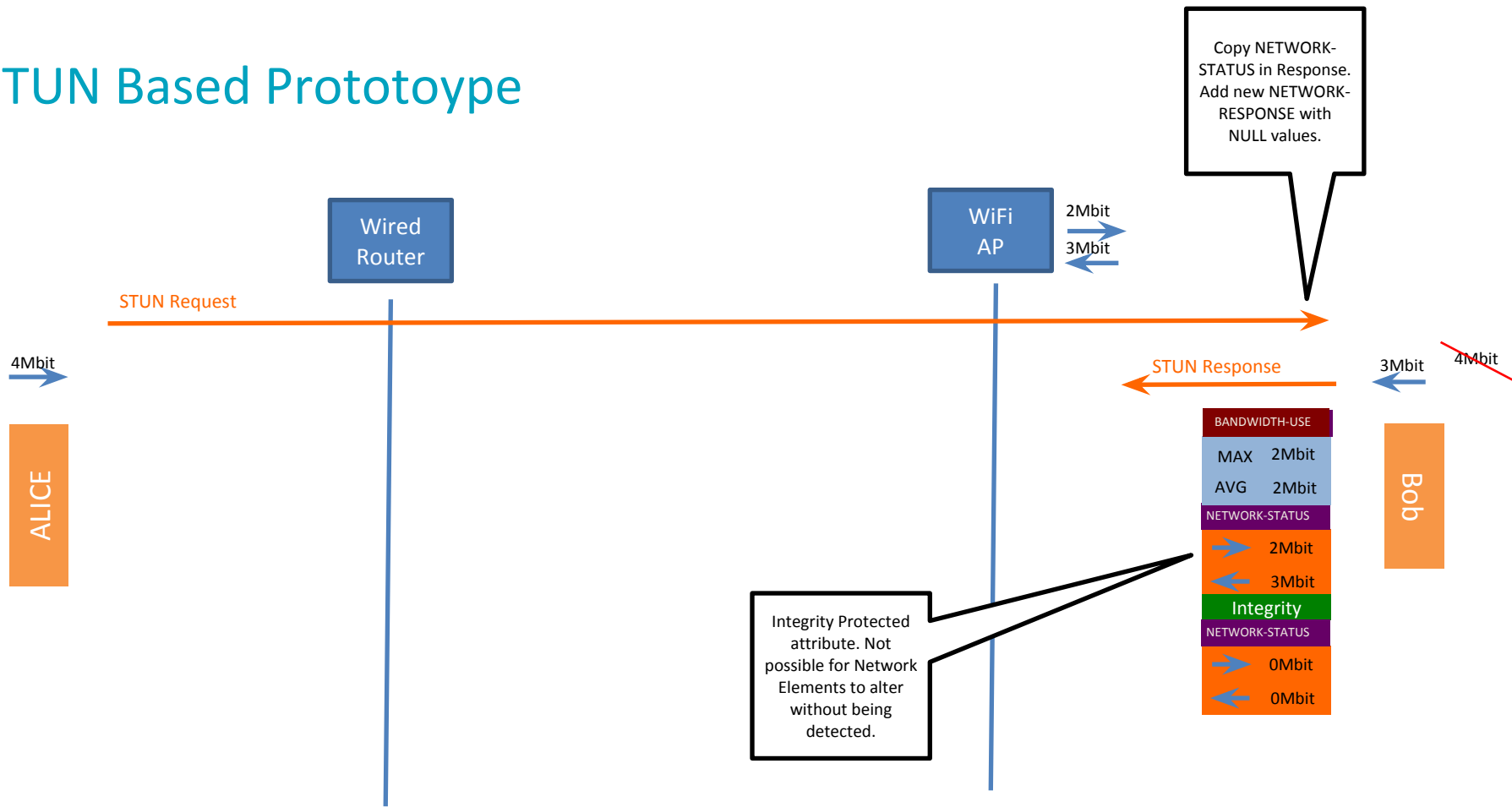
STUN Based Prototype



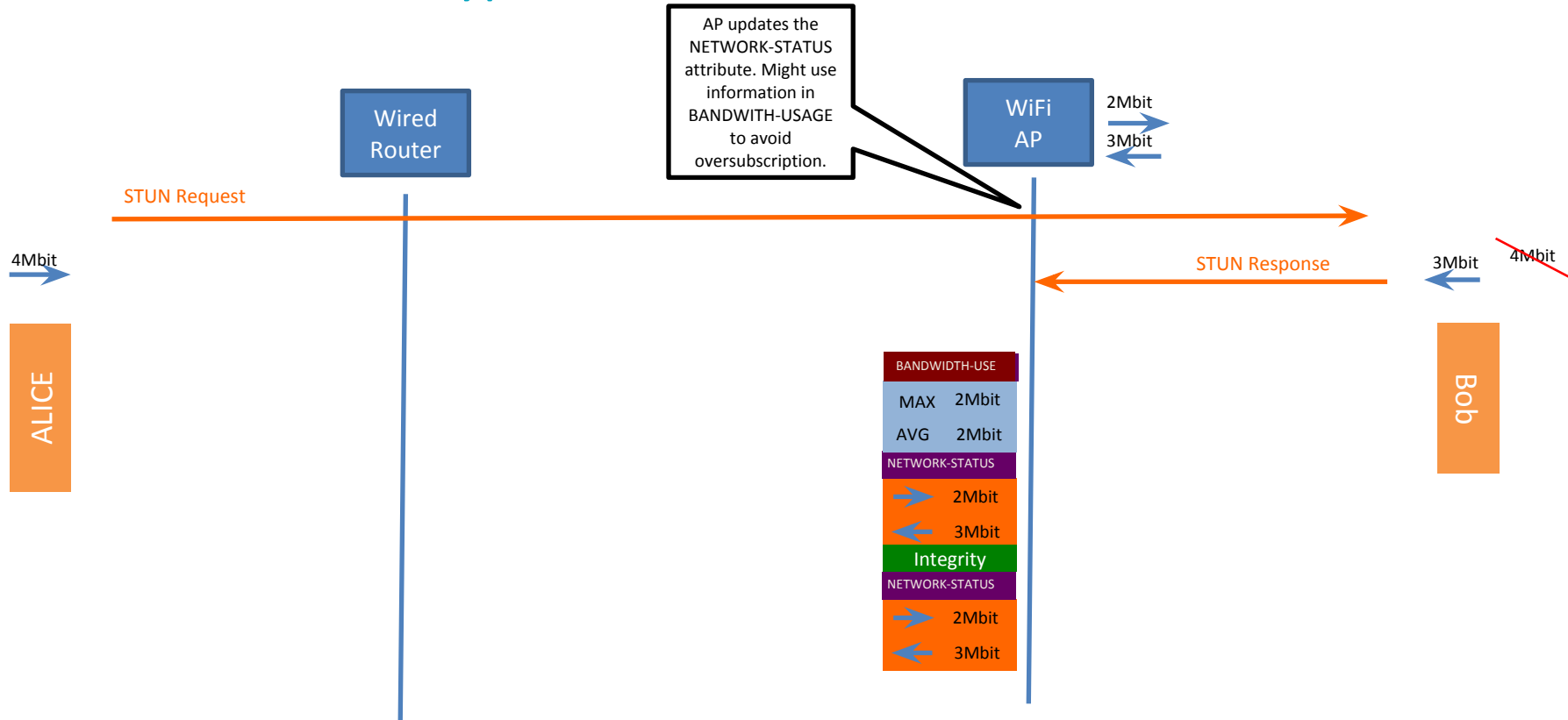
STUN Based Prototype



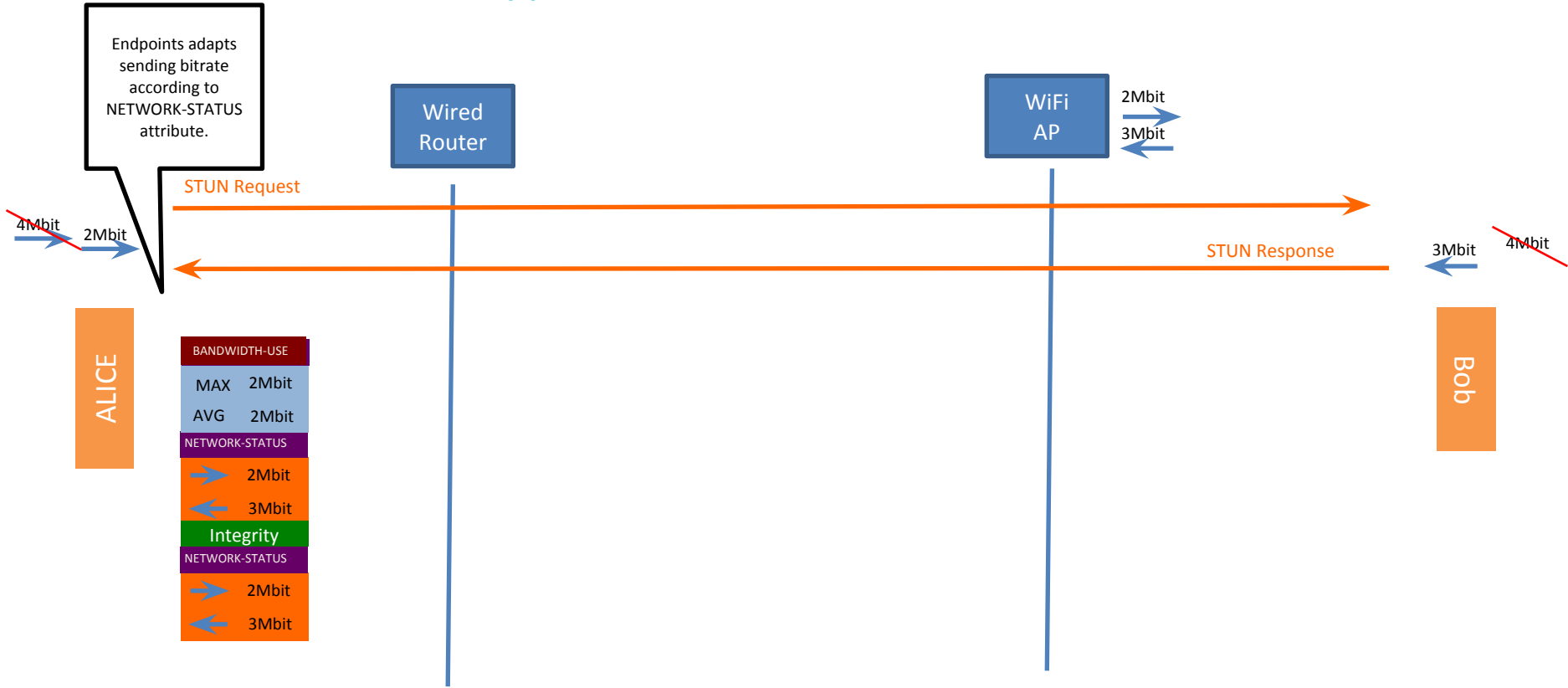
STUN Based Prototype



STUN Based Prototype



STUN Based Prototoype



Potential Hackathon Work Items for STUN/DISCUSS

- Test additional applications on hackathon setup
- Implement modified apprtc for side-by-side video testing with single browser session (including on screen instrumentation)
- Update NATTools library adding additional capabilities