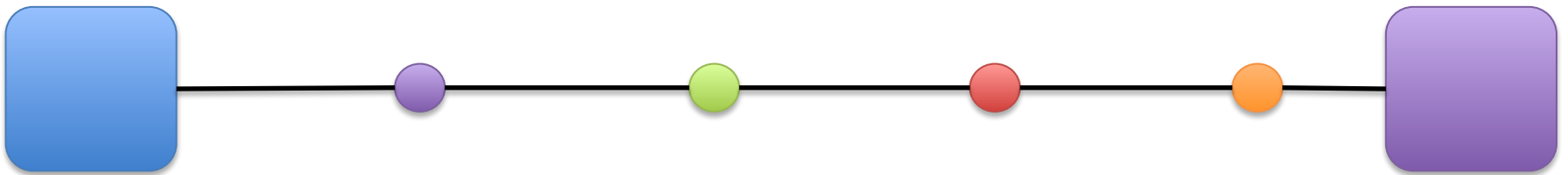


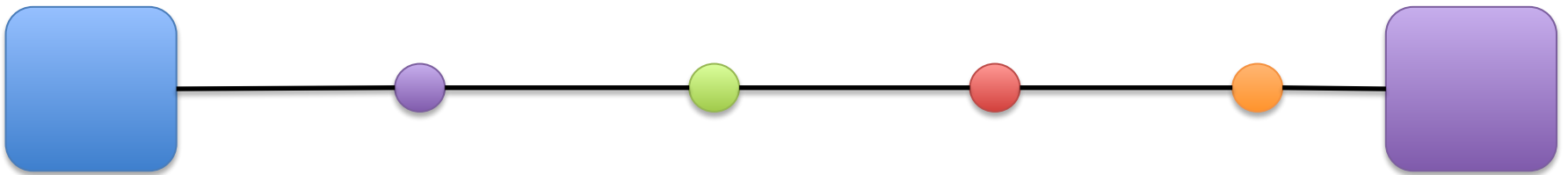
From  
STATIC  
to  
DYNAMIC  
Network Paths

# Network Options



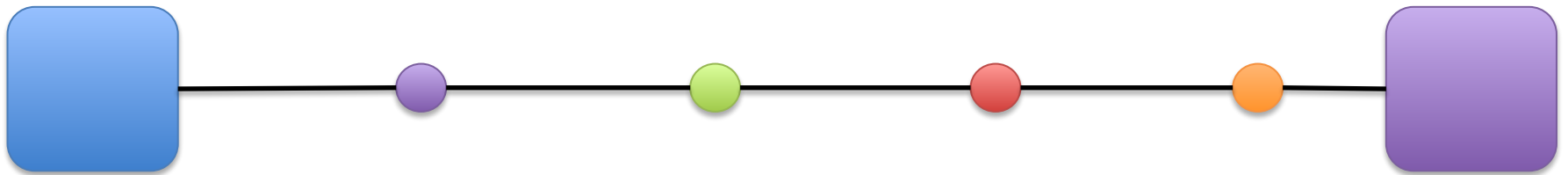
# Network Options

- RSVP: All or nothing. Does not work with NAT at all.



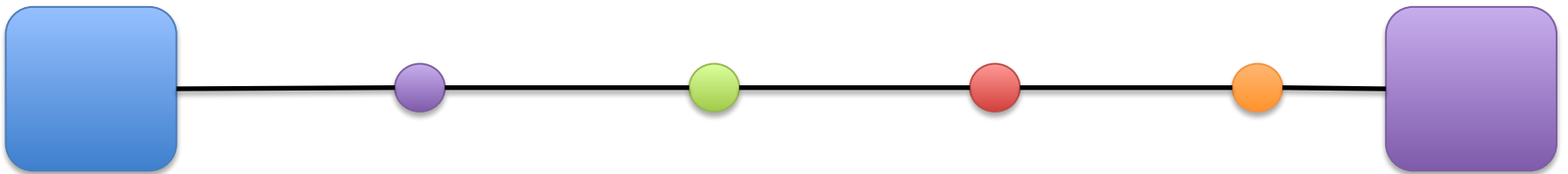
# Network Options

- RSVP: All or nothing. Does not work with NAT at all.
- ECN : Good for TCP. Fairness problems in UDP.  
Lack of OS support.

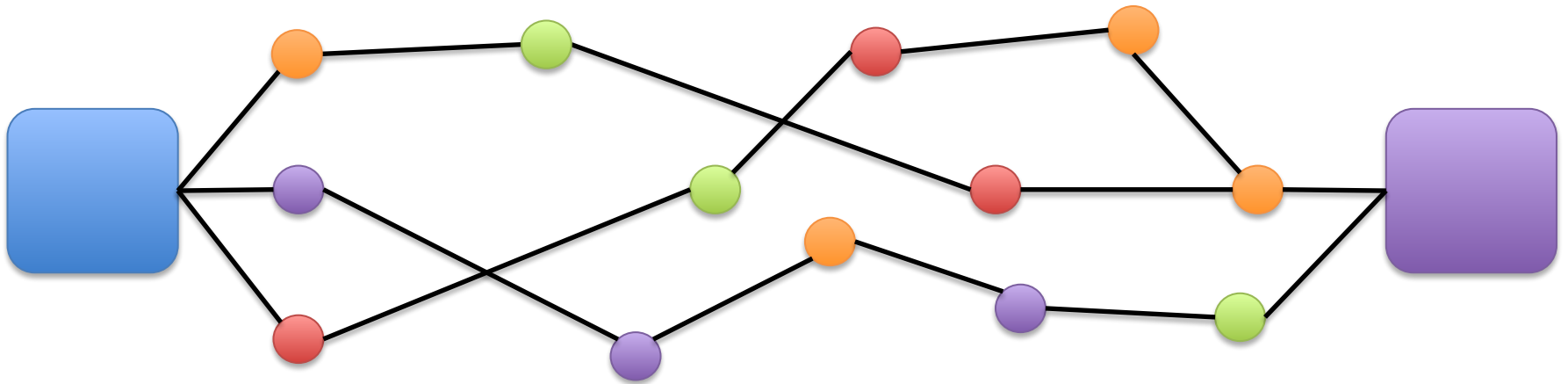


# Network Options

- RSVP: All or nothing. Does not work with NAT at all.
- ECN : Good for TCP. Fairness problems in UDP.  
Lack of OS support.
- DSCP: Different meaning in different networks.  
Might get retagged on the way.

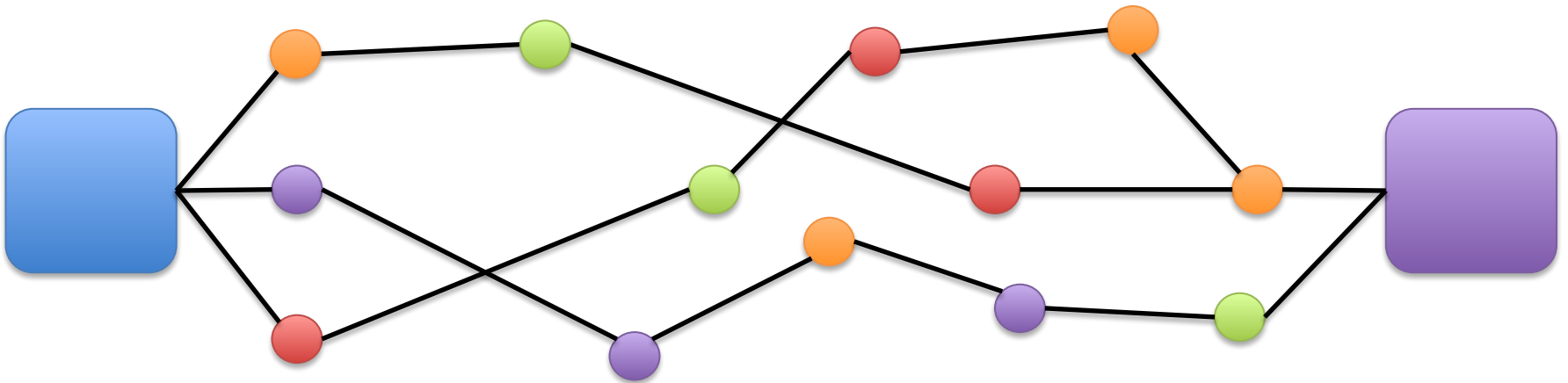


# Client Options



# Client Options

Rate Adapt : Getting so good that it discovers network problems before end-users notice.



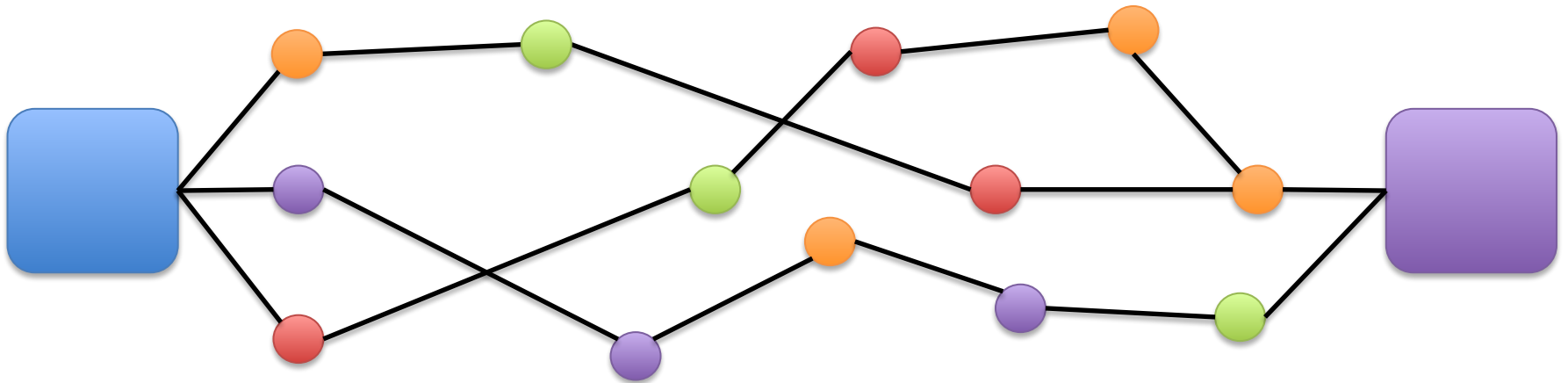




# End Goal

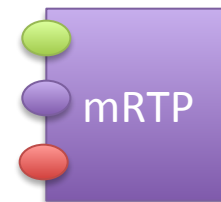
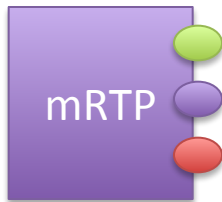
Find all possible combination of physical, IP (IPv4/IPv6), transport(UDP/TCP/TLS) and ports that have connectivity.

Get network and client feedback and choose the best suitable network path. If condition change, be able to dynamically switch between paths/protocols.



# Building Blocks

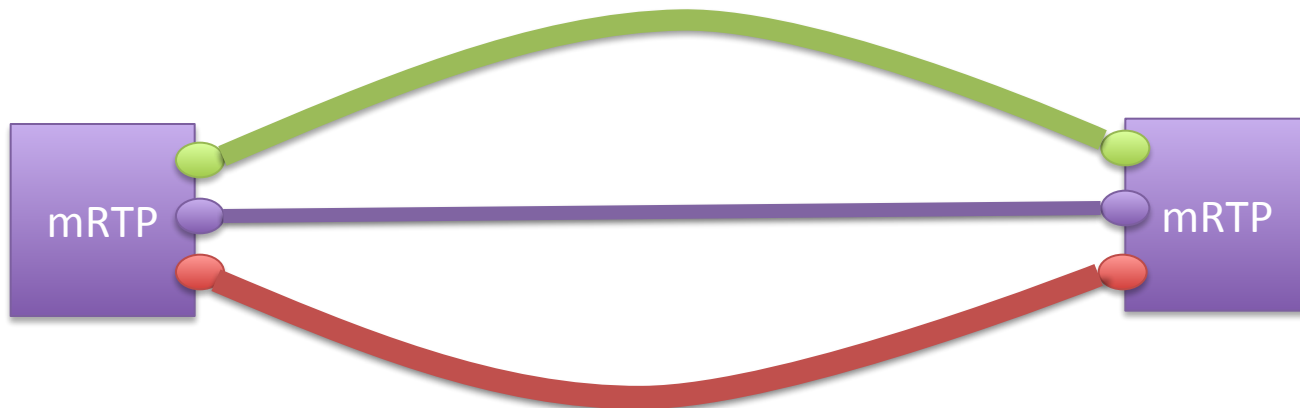
Multipath RTP



# Building Blocks

## Multipath RTP

Enables multiple network paths to be used for media



# Building Blocks

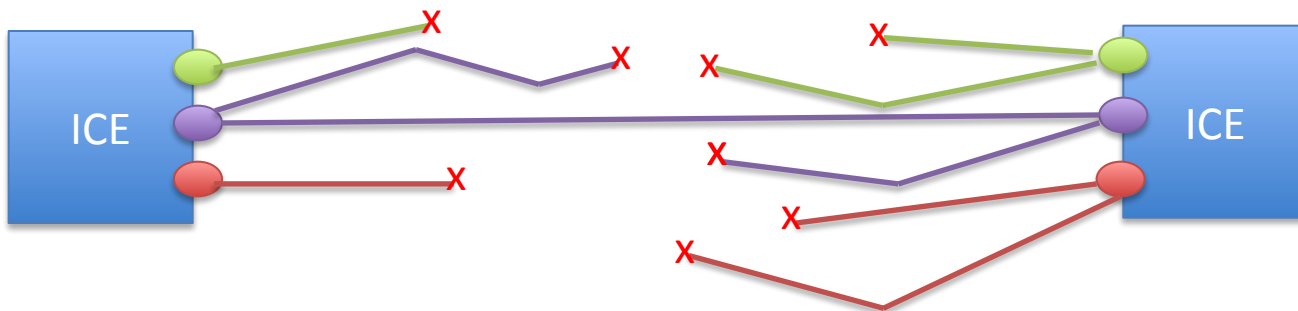
ICE



# Building Blocks

ICE

Checks for connectivity across IP, protocol and port

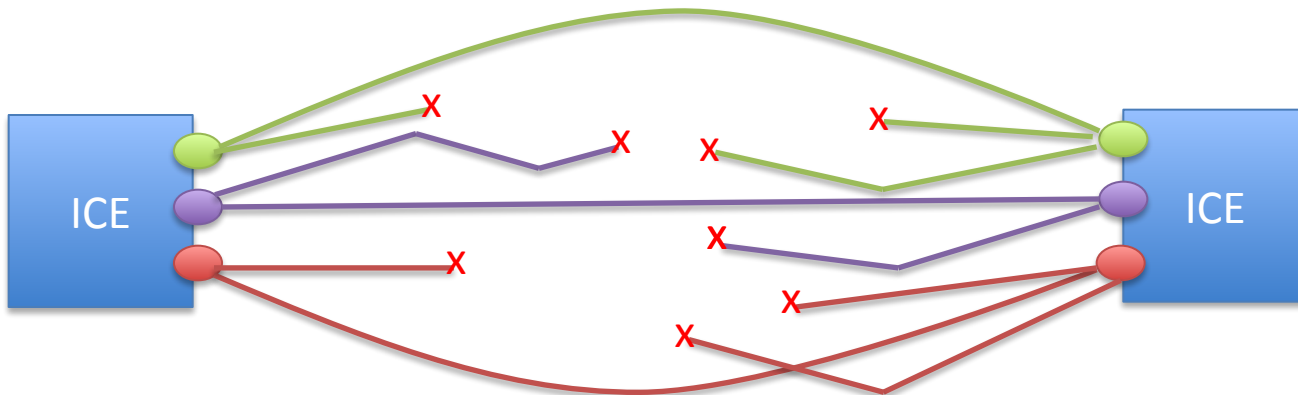


# Building Blocks

ICE

Checks for connectivity across IP, protocol and port

Builds valid list



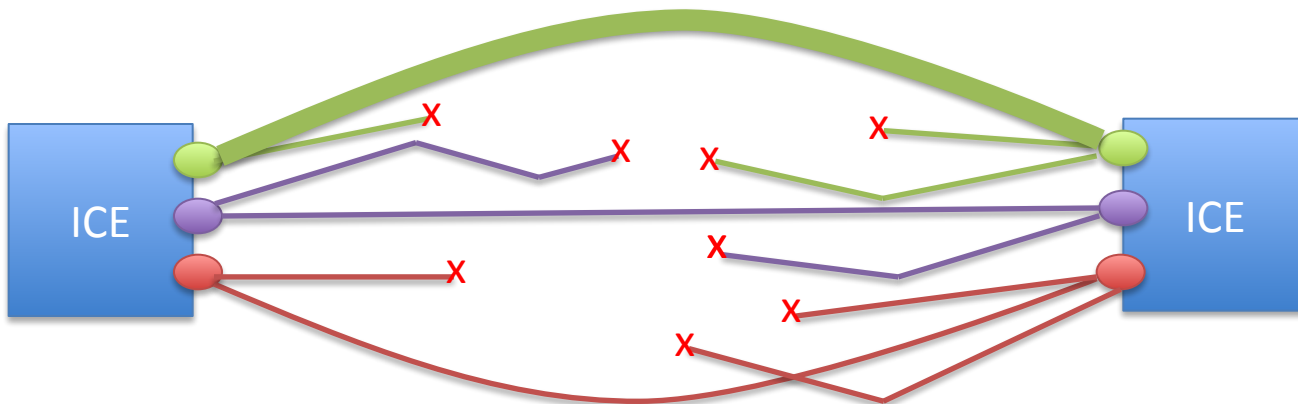
# Building Blocks

## ICE

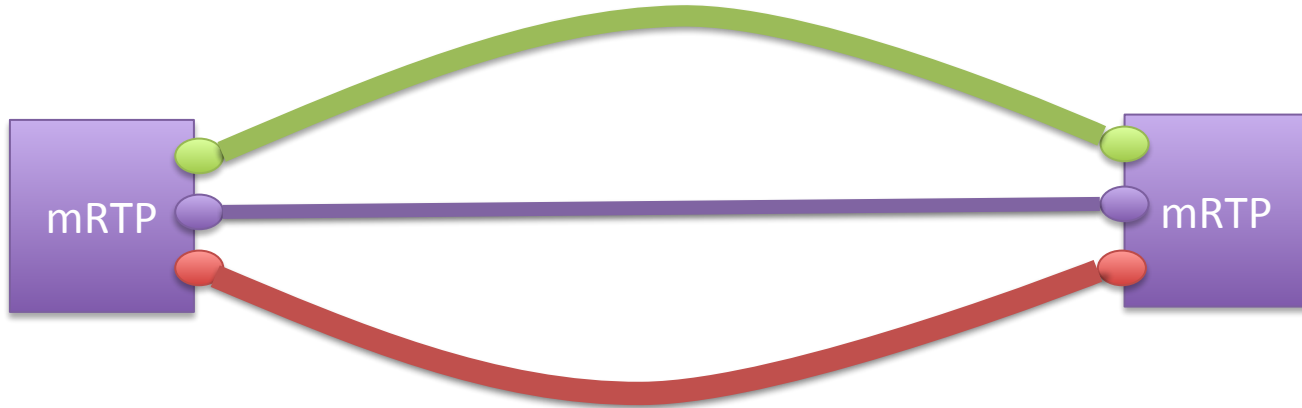
Checks for connectivity across IP, protocol and port

Builds valid list

Choses **\_one\_** candidate pair for communication

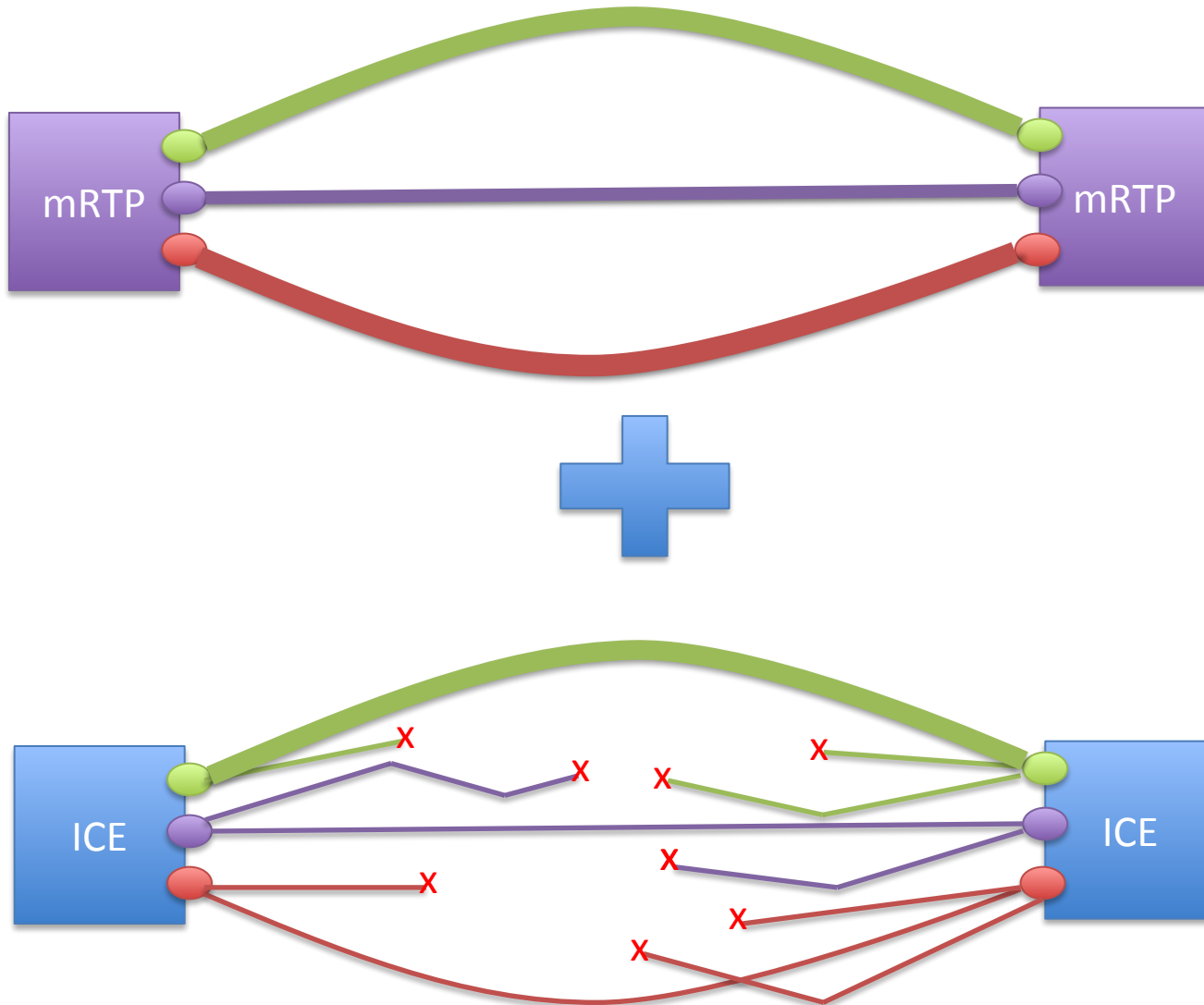


# Building Time

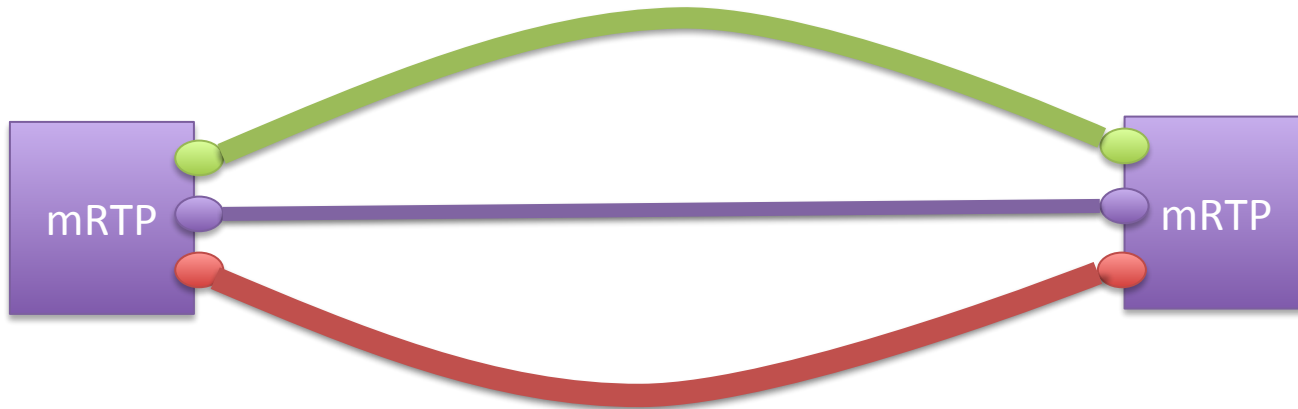




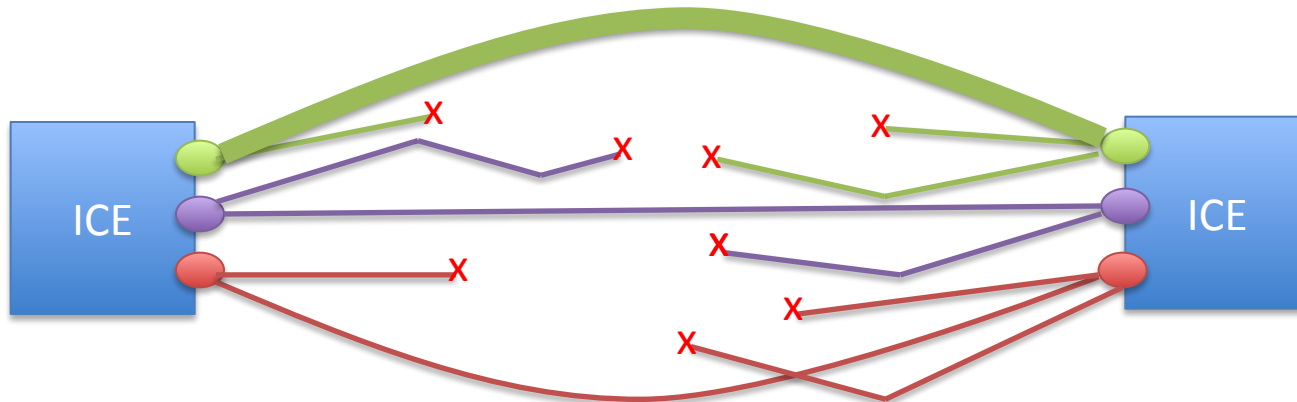
# Building Time



# Building Time



Creates nice transitions  
No need to switch media addresses  
if ICE detects a better path



# Avoid what?

TCP traffic



# Avoid what?

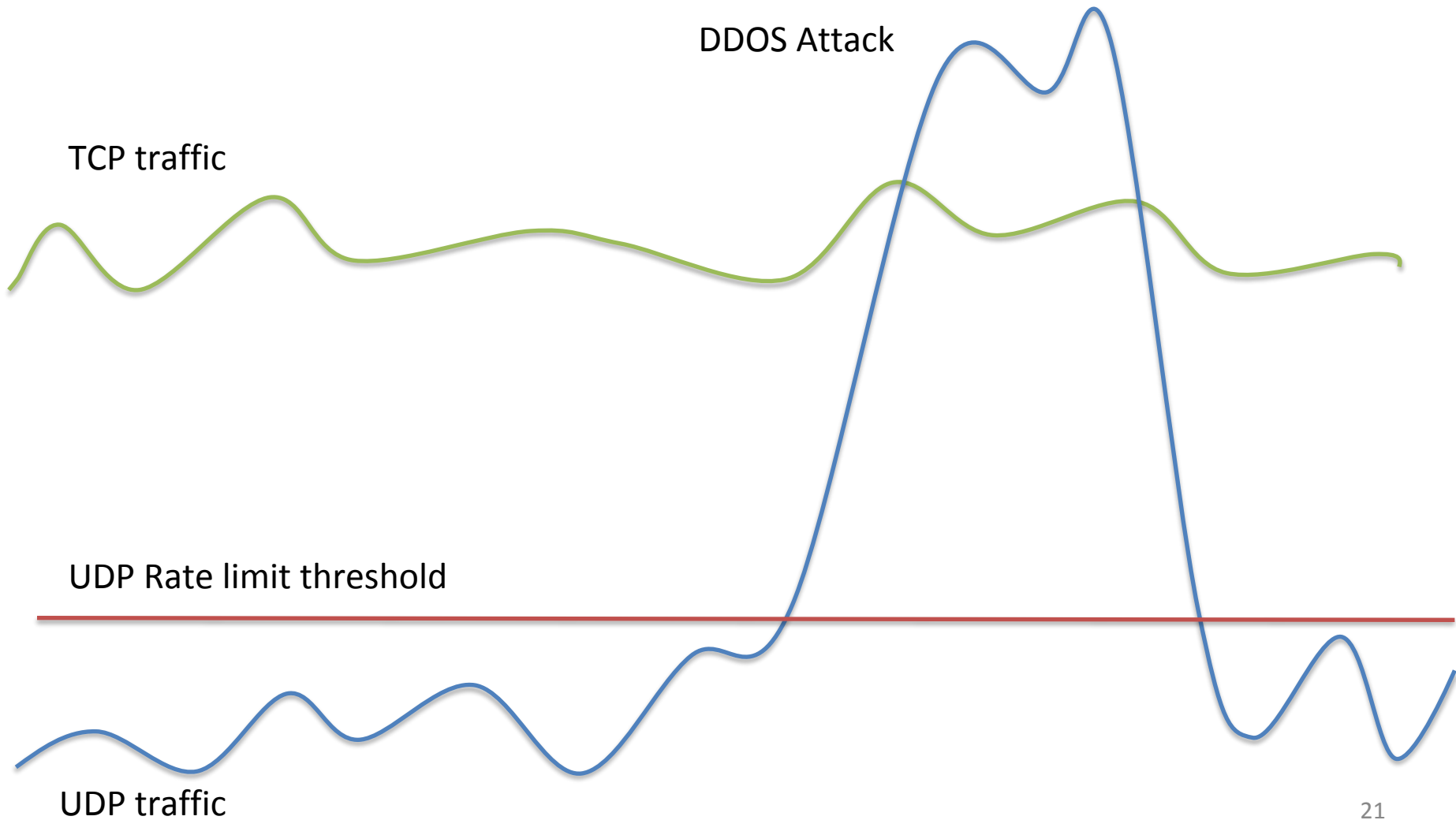
TCP traffic



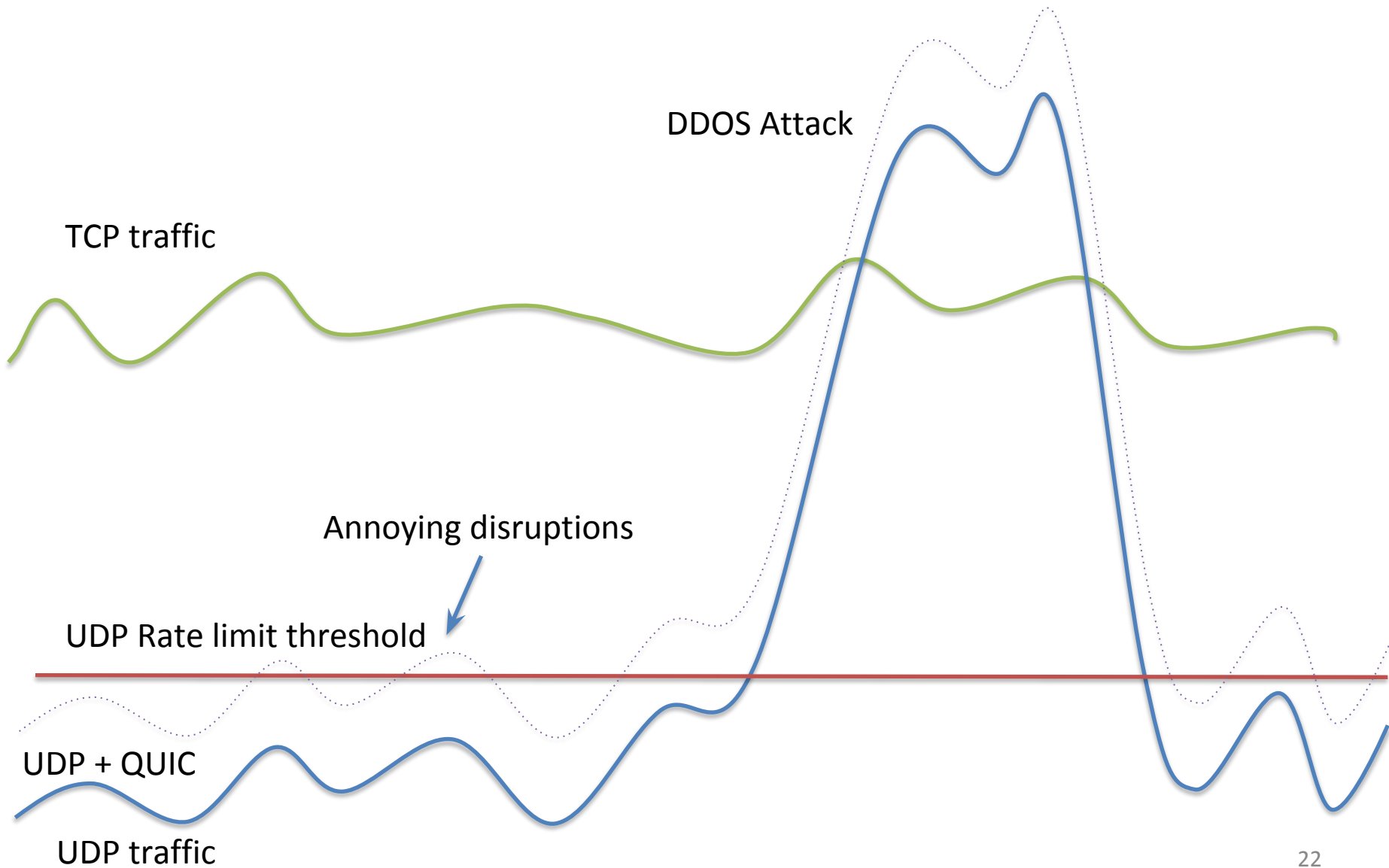
UDP Rate limit threshold



# Avoid what?



# Avoid what?



# Why

- Combining influence and avoidance
- Getting harder and harder to influence due to privacy and security.
- Internet is dynamic, deal with it.
- Dangerous with static assumptions, UDP is best for media etc..

# Are We Ready?

- Something we should do?
- QUIC vs mRTP?
- Ready to write drafts? code?