ADAPTIVE RADIO OUTPUT SCALING FOR POWER AND BANDWIDTH SAVING

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METHOD
FEEDBACK

- Retransmissions
- CSMA-CA
- (No) ACK
- RSSI/LQI
FEEDBACK

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FEEDBACK

- Retransmissions
- CSMA-CA
- (No) ACK
- RSSI/LQI
PROBING
PROBING

No Retransmissions ➔ Decrease Power
PROBING

No Retransmissions ➔ Decrease Power
Retransmissions ➔ Increase Power
PROBING

TCP congestion avoidance style:
PROBING
TCP congestion avoidance style:
• Reno
PROBING

TCP congestion avoidance style:
• Reno
• Cubic
PROBING

RENO (POWER STYLE)
PROBING

CUBIC (POWER STYLE)
IMPLEMENTATION

TX init

Unicast?

Y

Configure TX power

Transmit

Hardware Radio

TX finished

Calculate next TX

Record TX stats

Configure full power

TX Done
MEASUREMENTS

REALISTIC URBAN ENVIRONMENT
RENO STYLE

ETX, ping

ETX per packet (reno)
Transmit power (reno)

Transmit power (dBm)

Time (s)
CUBIC STYLE

ETX, ping

ETX per packet (cubic)
Transmit power (cubic)

Time (s)

ETX

Transmit power (dBm)
CONCLUSION/DISCUSSION
CONCLUSION/DISCUSSION

• Works
CONCLUSION/DISCUSSION

- Works
- Susceptible to random loss
CONCLUSION/DISCUSSION

- Works
- Susceptible to random loss
- Real power saving minimal
CONCLUSION/DISCUSSION

• Works
• Susceptible to random loss
• Real power saving minimal
• Receiver independent
DEMO