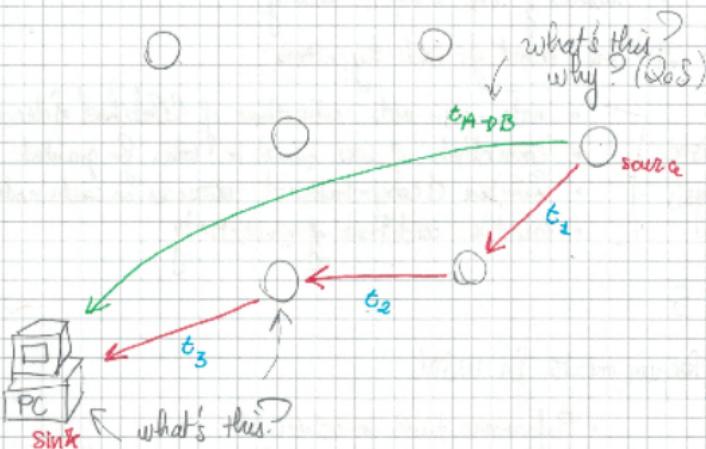


## Slide 1



## Slide 2

- ▷ Text →
  - ↳ sometimes
  - ↳ through the internet, but not connection
  - ↳ timeliness
  - ↳ why it doesn't fit our purpose
    - many - many
    - no guarantees

## Slide 3

- ▷ RELATED work → few words about each protocol
  - different notions of timeliness  
(not too many details)
- ▷ one word about the generalized notion

## Slide 4 "The fun part starts"

▷ goal: End-to-End Latency

↓ instead of hop-to-hop latency

▷ Let me word for each hypothesis

statistic  
analysis

- node-per-node estimation of likelihood of each link meeting
- Connectivity of nodes cannot be taken for granted
- Limited computational resources on each node
- Variable conditions of connectivity

## Slide 5

▷ Requirements for WSNs

- Performance should be achievable
- Explainings more detailed than success/failure (continuous function)
- Readiness with a confidence interval

## Slide 6

▷ Definitions: What we do

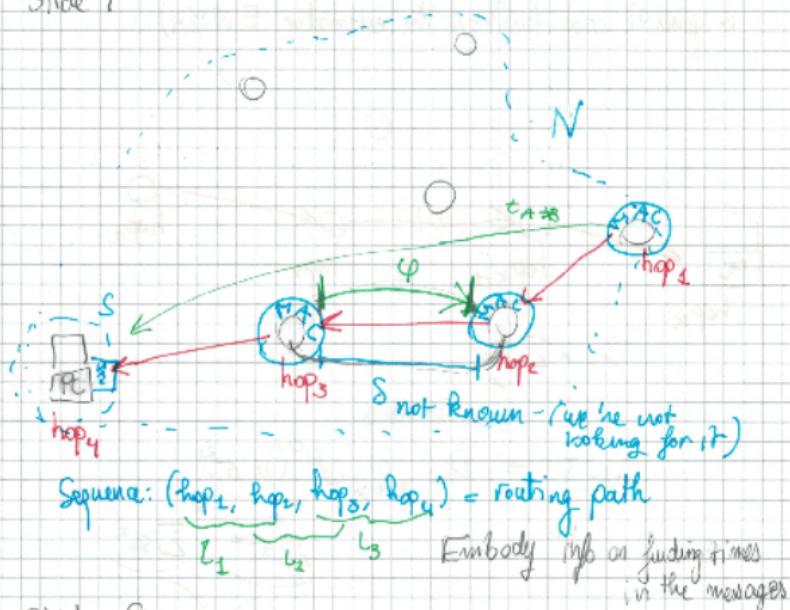
→ applies to a sequence

→ has bounds  $(t_i, t_f)$  and  $p \in [0, 1]$  for confidence

→ E2E delay = IP (the continuous function that makes up the process above)

→ this generalizes timeliness (proof of p 425, s 1)

## Slide 7



## Slide 8

D Case 2: simple

$(hop_1, hope)$  with  $\delta_{hop_1}$

$$Deze = \sum_{hop_i} \delta_{hop_i, hope(i)}$$

$R \checkmark$  has  $\bar{x}$ ,  $s$   
 Mean  $\downarrow$  Variance  $\downarrow$  estimator: EWMA

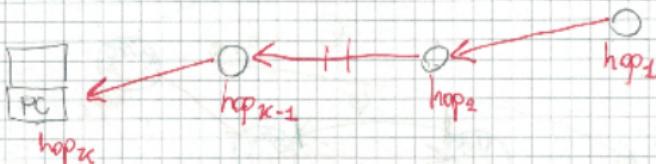
EWMA  
 $\downarrow$  signal = Deze



$$+ S_t^2 = \frac{t-1}{t} S_{t-1}^2 + \frac{1}{t-1} (S_t - \bar{x}_t)^2$$

## Slide 9

→ general case (without the estimator EWMA)



$$D_p = \sum D_n$$

↑  
Random Variables

$$\text{CLT} \rightarrow D_p \xrightarrow{K \rightarrow \infty} N(\mu, \sigma^2)$$

$$\sum x_n^* \quad \sum s_n^2$$

got from the samples

which is to say:

$$\text{by CLT} \left( \begin{array}{l} \mu = \mu \text{ (original distribution)} \\ \sigma^2 = \sigma^2 \text{ (original distribution)} \end{array} \right)$$

## Slide 10 -

Hypothèses permettant de vérifier le TCL

→  $\sim$  Indépendance

→ Identically distributed

Slide 10b experimental conditions → parameters

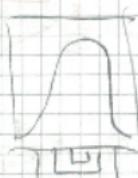
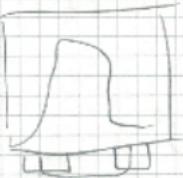
Slide 11 Results (experiment)  
(maybe 2 slides)

? intervals

2 - minimal data

3 - normal distribution  
with heavy tail

4 - the plot



## Slide 12



$$|rpl| = 5$$

Slide 13 oral ↓ comparison



$$|rpl| = 10$$

## Slide Conclusions on Experiment

► Valid, but...

- ↳  $|rpl| = 10$  incurs higher collision proba
- ⇒ higher delays (in avg)
- ⇒ pink peak

↳