eyeSaaS

Managed WiFi access

Geir Arne Rimala, Eye Networks

Agenda

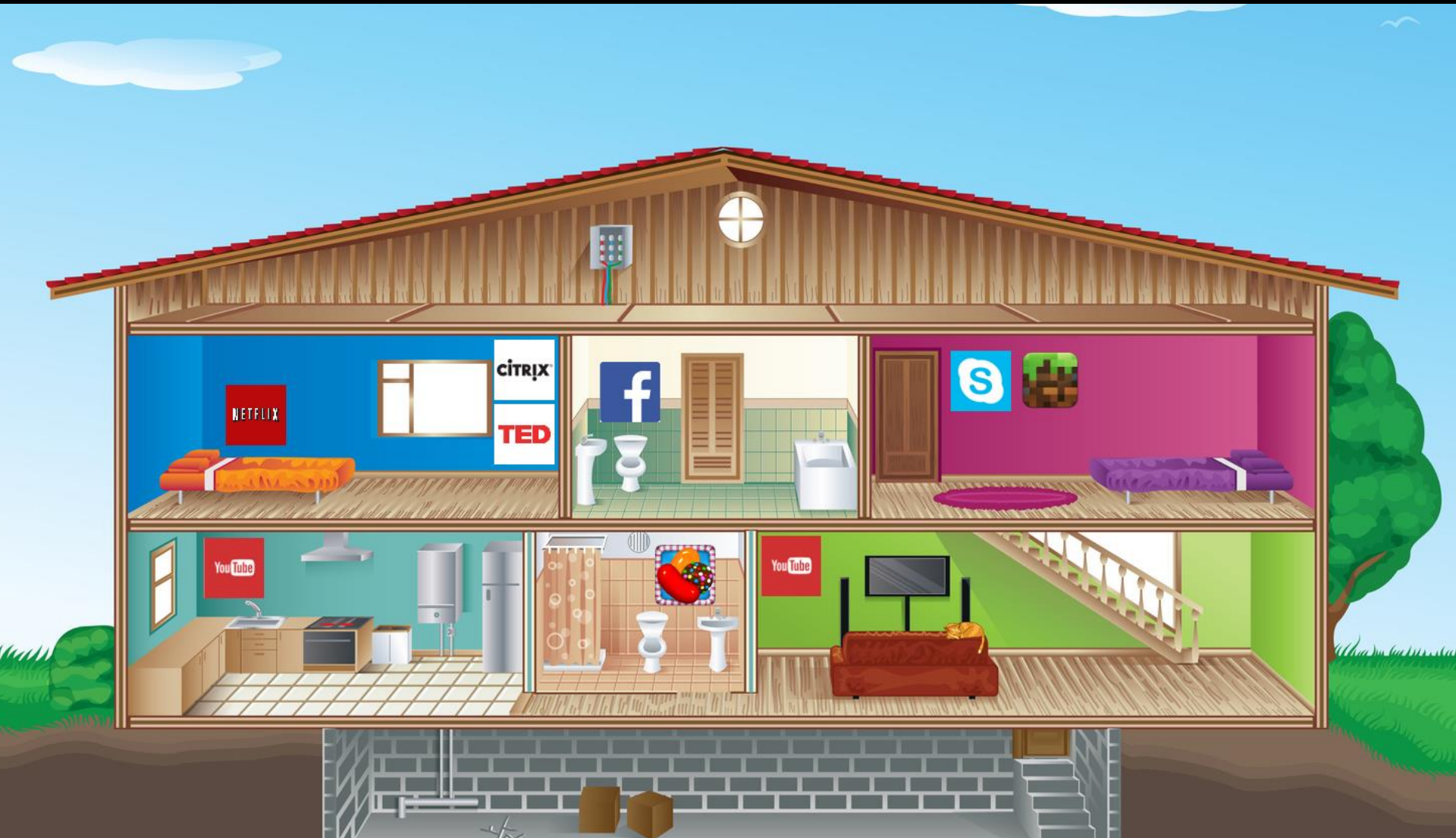
- What are we trying to solve
  - Goal
  - Status today
- How are we going to solve it
  - Wireless
  - Management

Goal

- > Full WiFi coverage
- > Handle many devices (IoT)
- > Seamless mobility (Roaming)
- > Managed by the service provider
  - > Support
    - > Reactive & Pre-emptive
  - > Usage insight (trends)
  - > Business insight

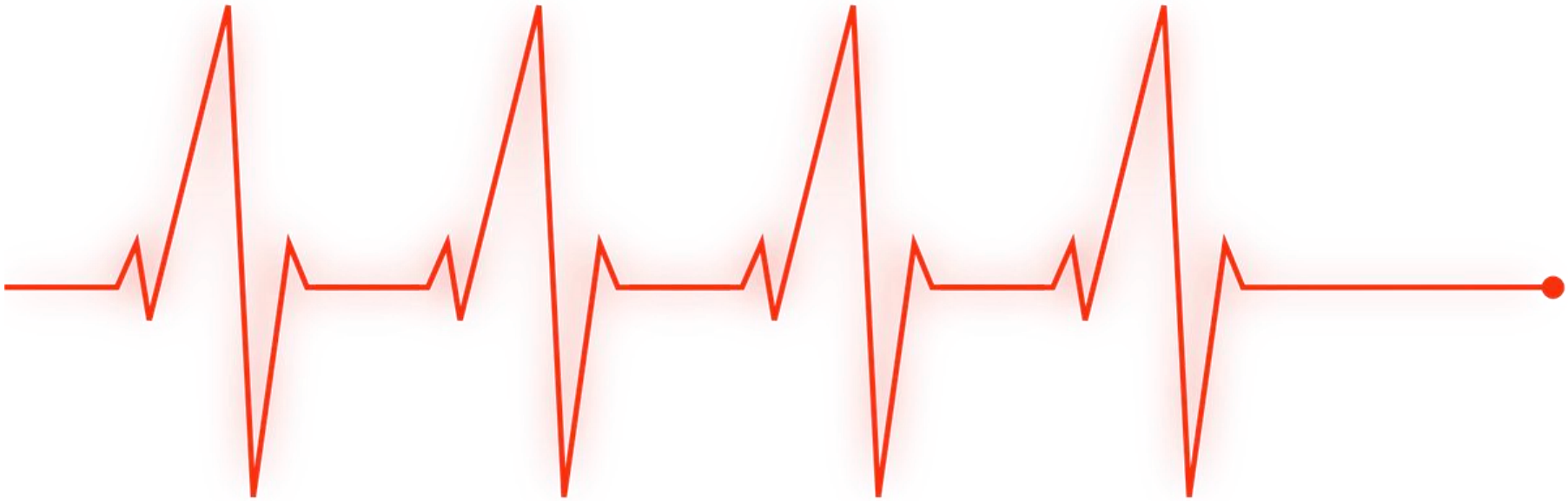
eyeSaaS

Customer has high expectations



Some of Today's Challenges May Seem Like Annoyances

Tomorrow's Challenges May Involve Health and Safety



For Most ISPs, the Home Network Is in the Dark

eyeSaaS

Short-Sighted “Solutions” Don’t Cut It

> “Can you try with a cable?”

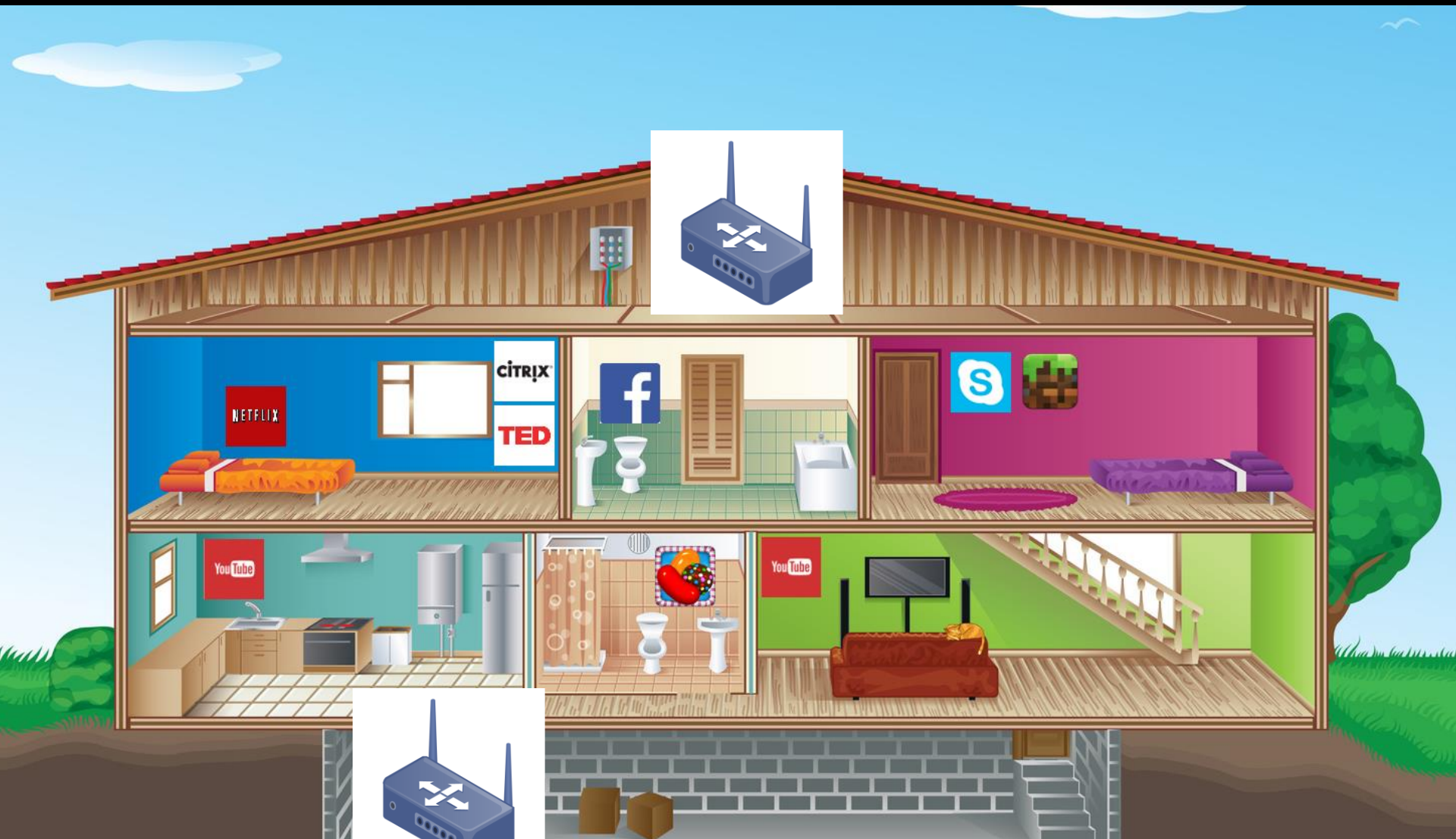
> “Buy a repeater”

> “We will replace your CPE”

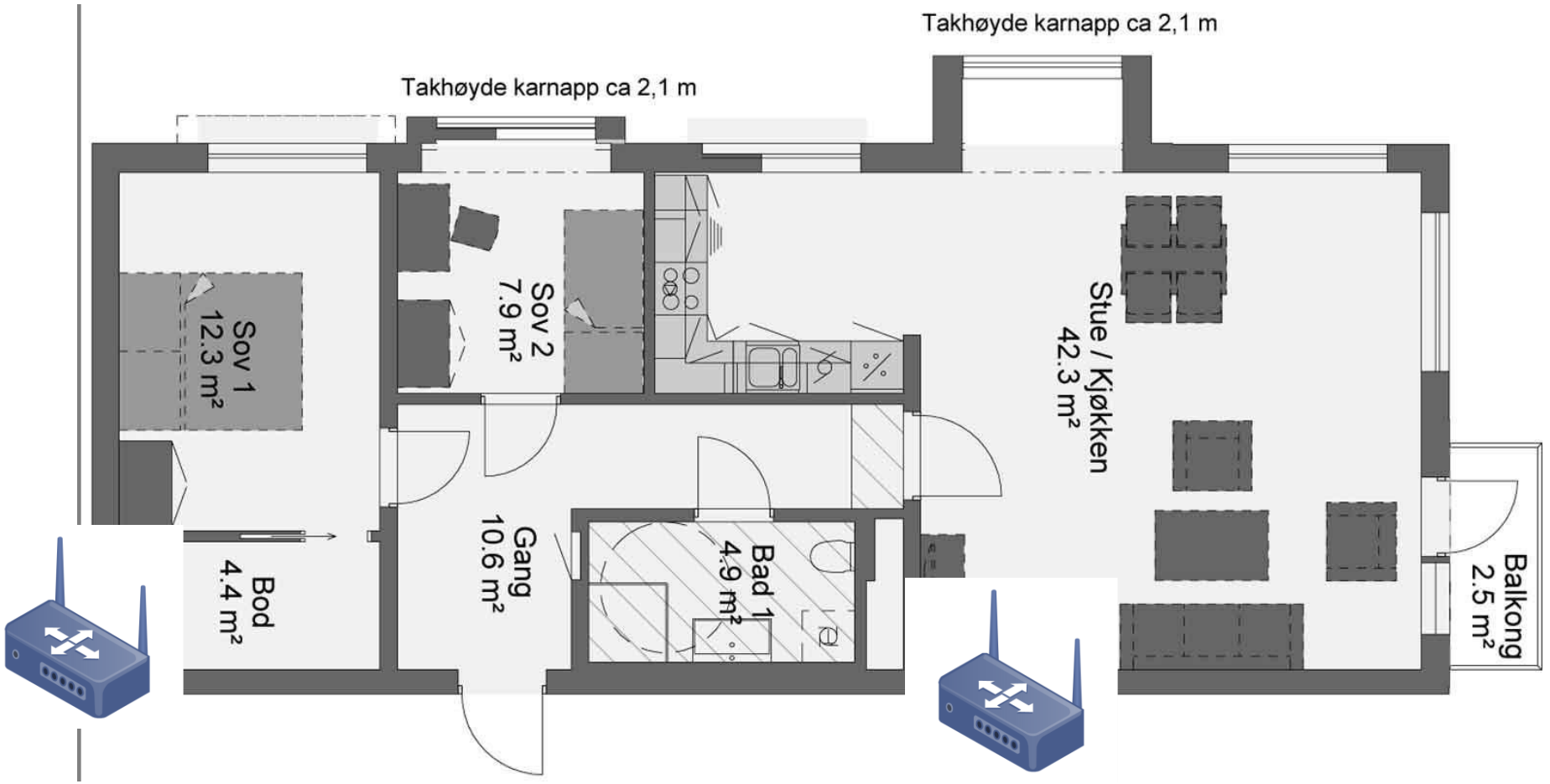
Foto: Jimmy Kortrijk (Flickr)

eyeSaaS

It’s not (necessarily) your CPE’s fault

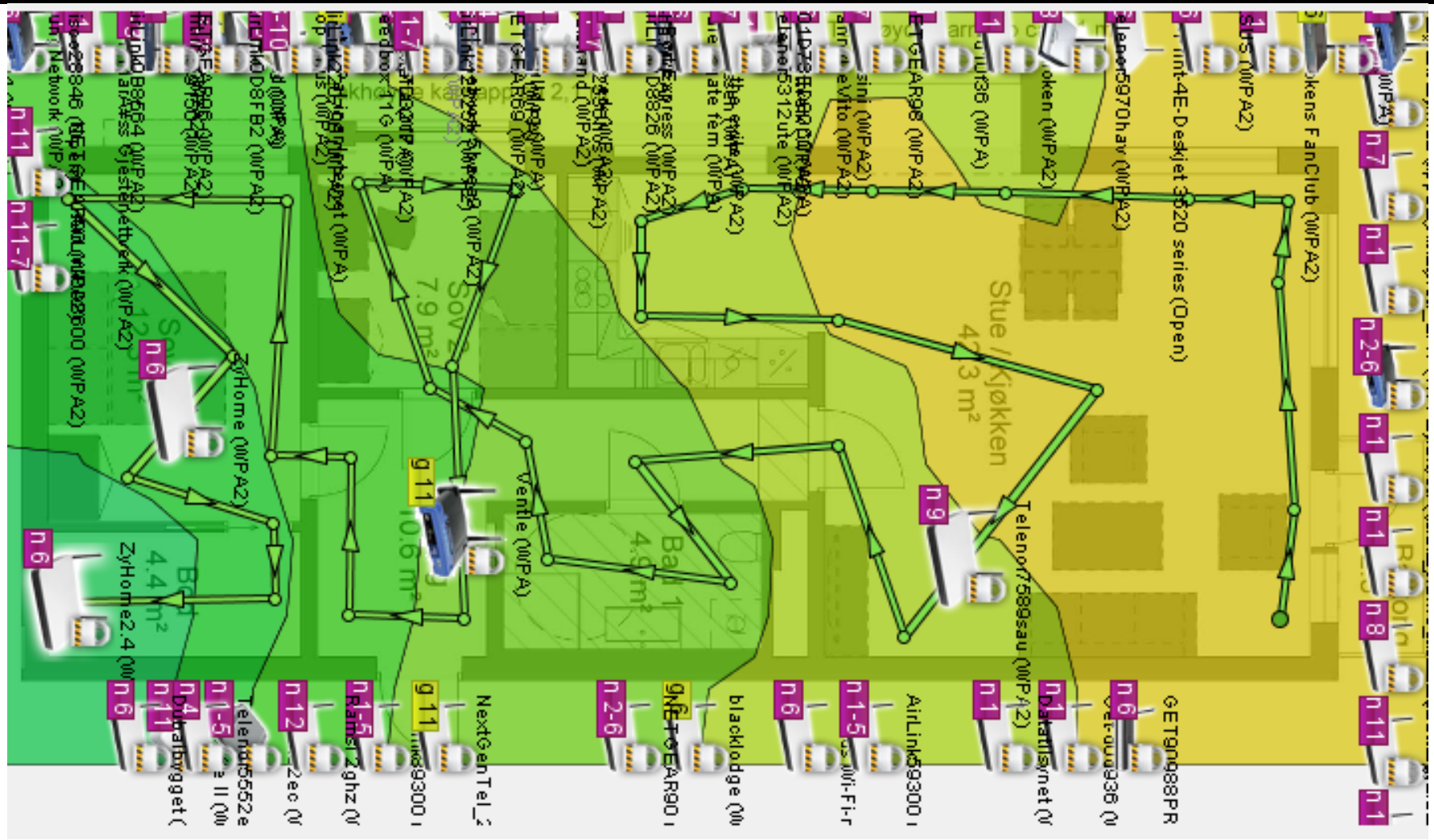


It’s not (necessarily) your CPE’s fault

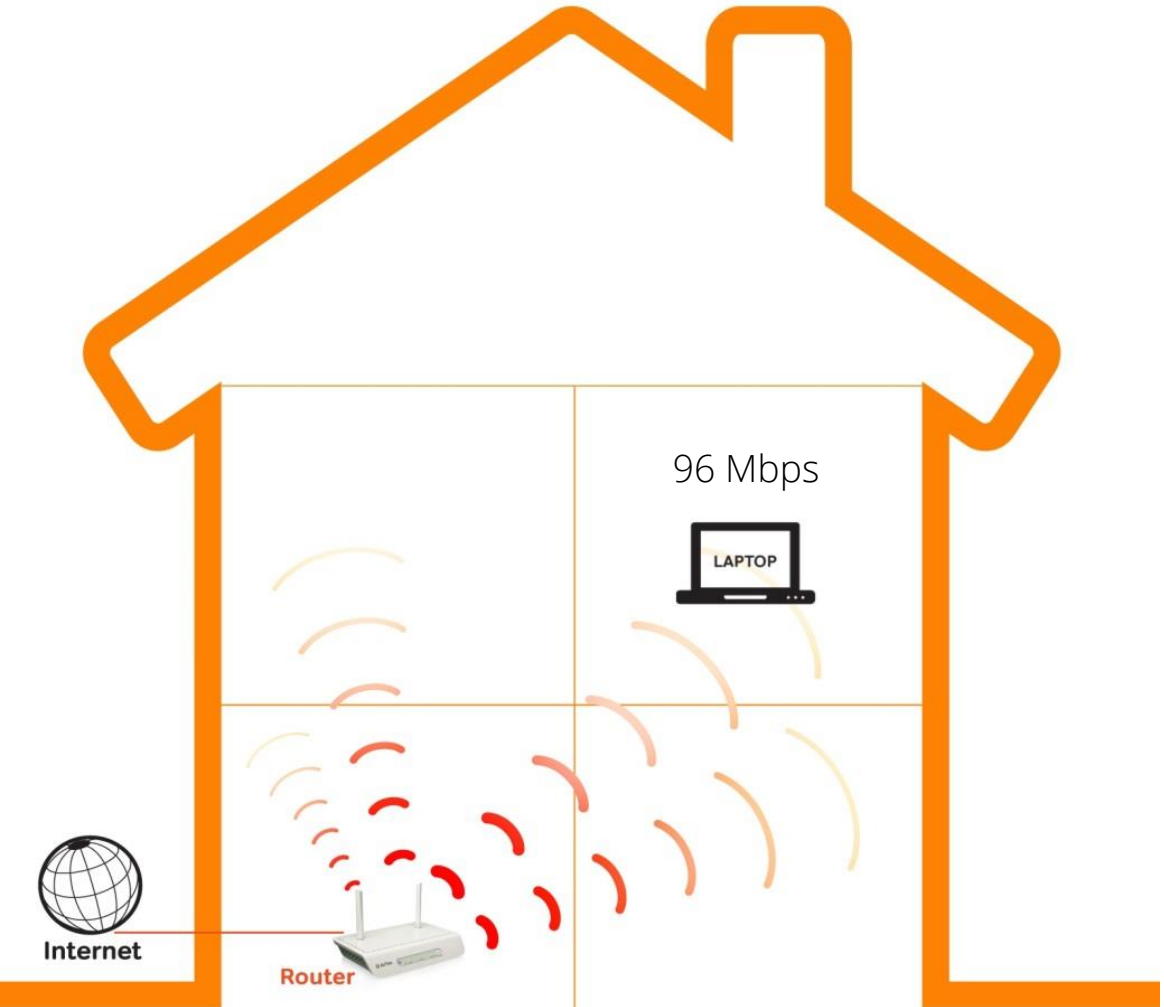


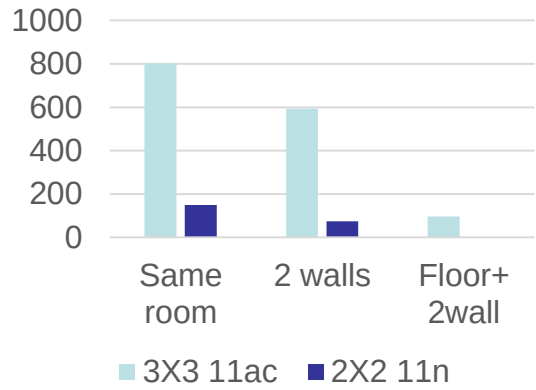
eyeSaaS

It’s not (necessarily) your CPE’s fault



One client – distance matters

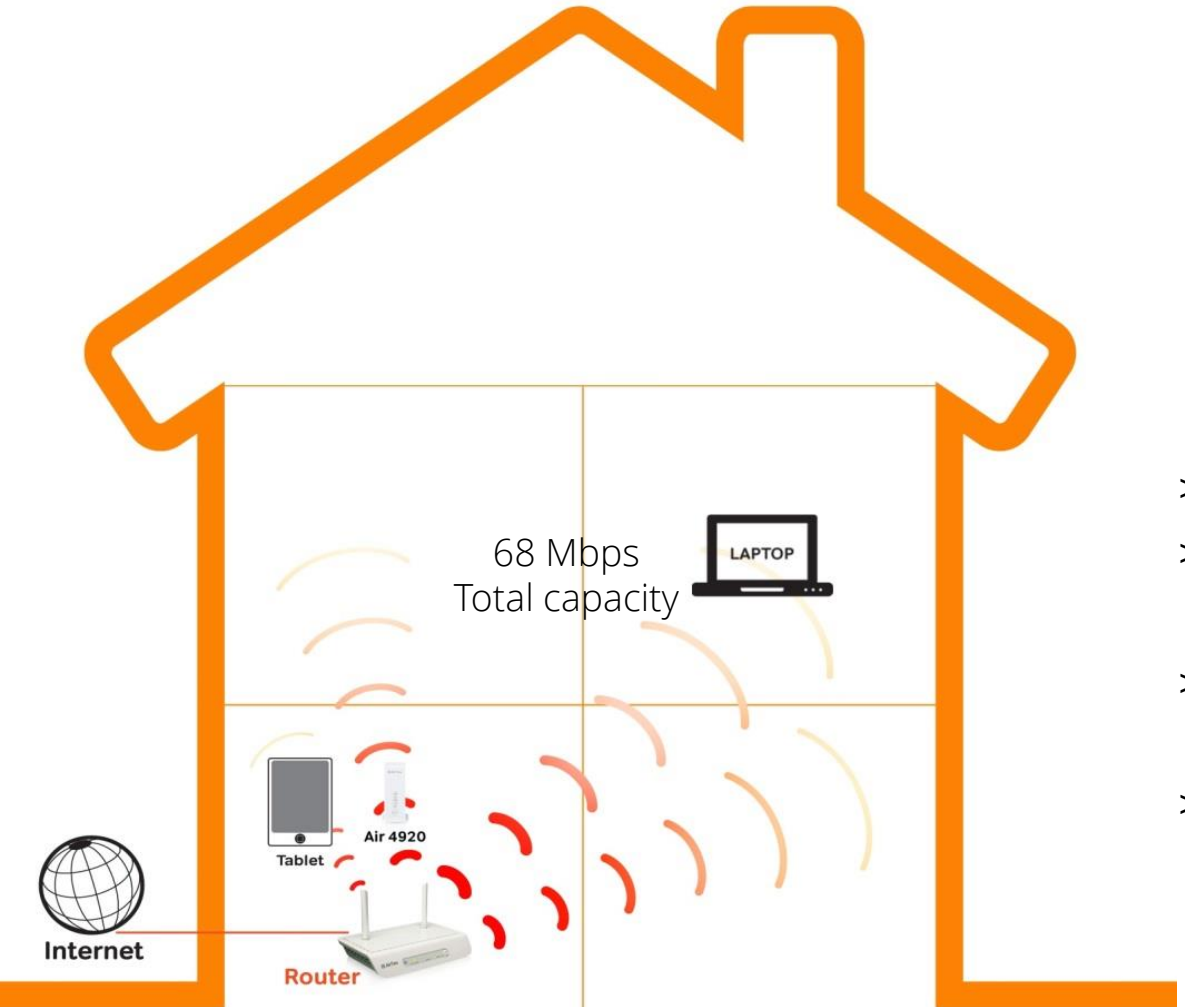


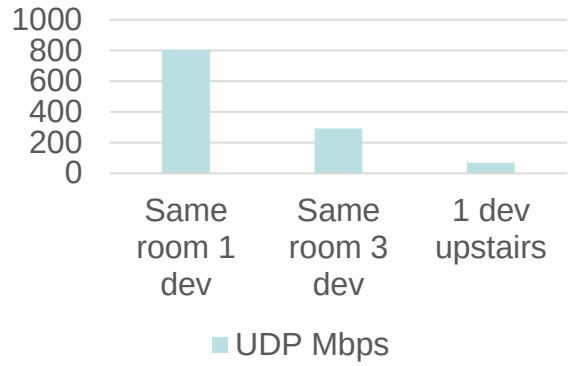


> Same room: 802 Mbps
> 2 walls, 1 floor: 96 Mbps

> 3x3 AC (Macbook)
> iPerf UDP throughtput

Three clients: Capacity reduced by 2/3





- Same room: 802 Mbps
- 2 walls, 1 floor: 96 Mbps

- 3x3 AC (Macbook), 3x3 AC (WLAN adapter), 2x2 N (iPad 4)
- iPerf UDP throughtput

Airtime

2 Mbps

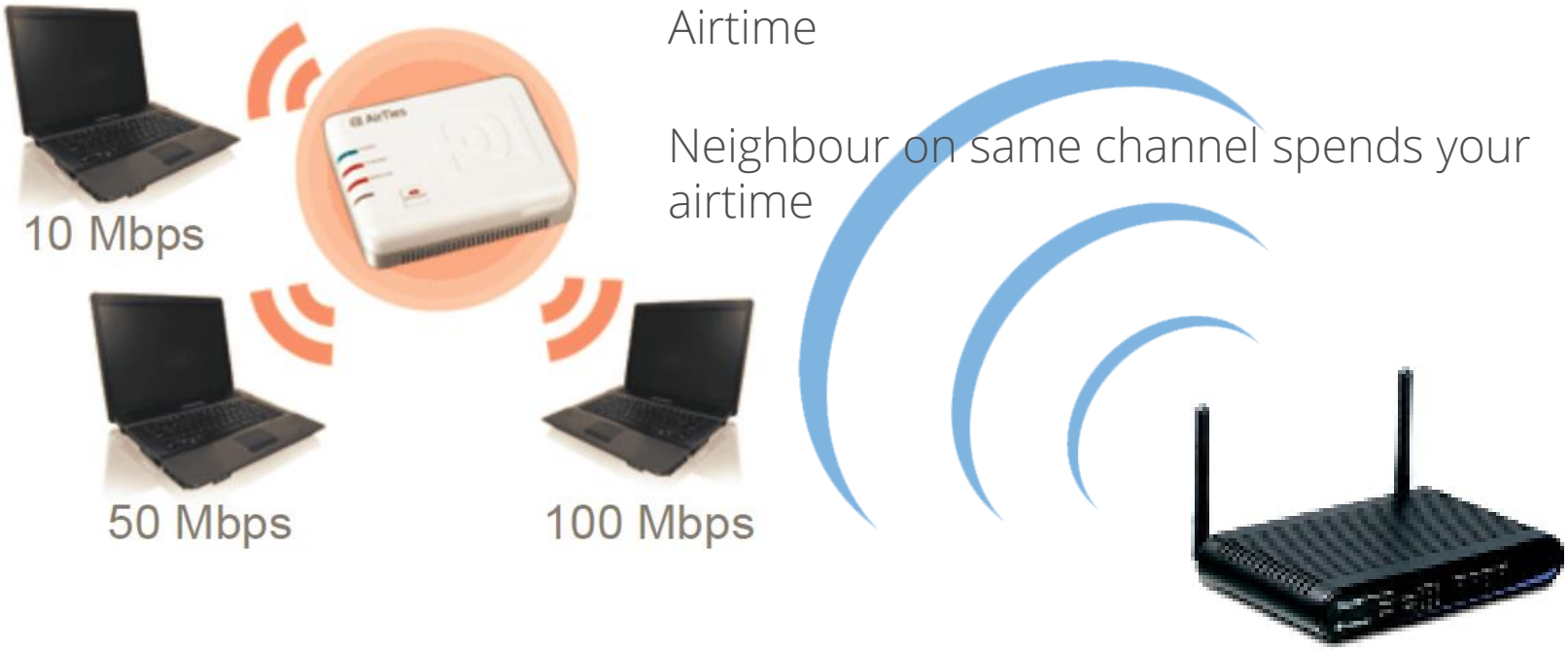
2 Mbps

1 Mb / 10 Mbps + 1 Mb / 50 Mbps + 1 / 100 Mbps =

10% + 2% + 1% -> 13 % airtime spent

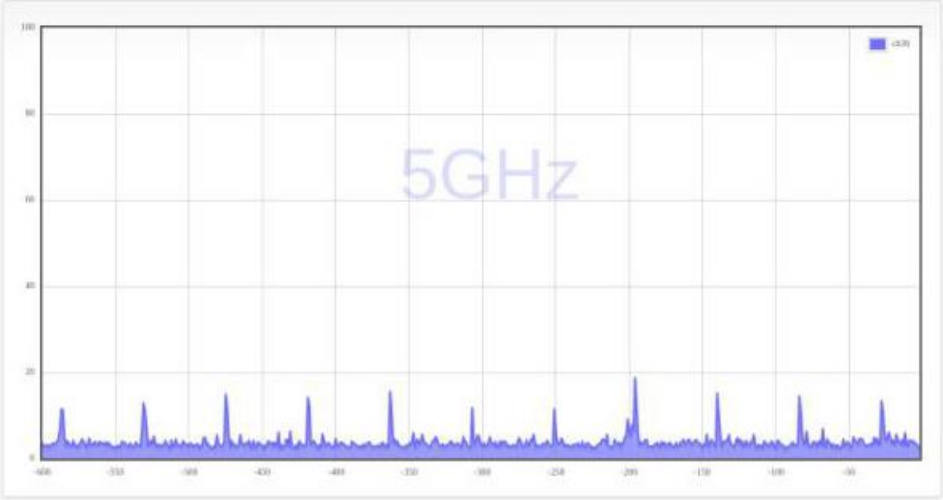
«Bad Apple»: 2 * 1 Mb / 2Mbps = 100% Airtime

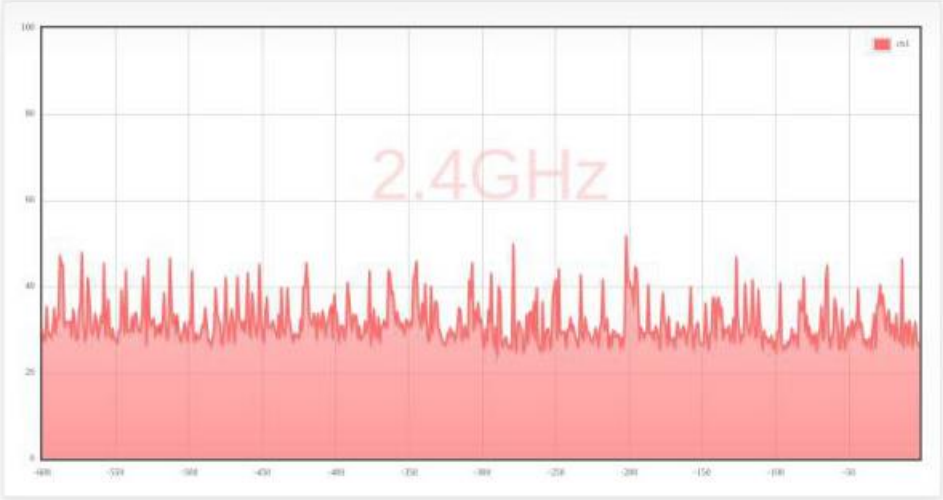
Neighbour on same channel spends your airtime



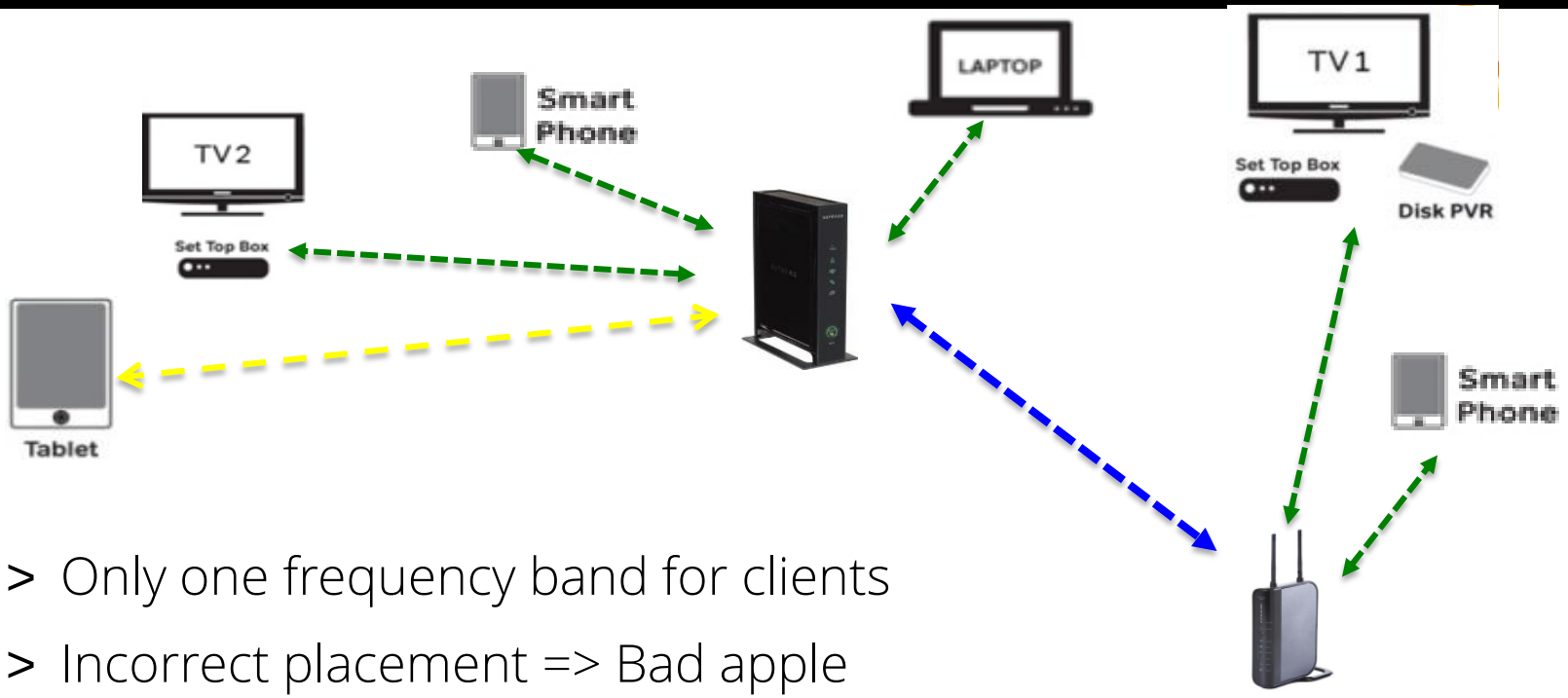
eyeSaaS

You never get 100% airtime on 2.4GHz





Why not repeaters?



- Only one frequency band for clients
- Incorrect placement => Bad apple
- Static configuration, no roaming

Static repeaterlink

Good wireless link

Poor wireless link

Status today

> Coverage problems

> Bad apples

> Congested 2.4 GHz

> Close to max number of clients

> No roaming

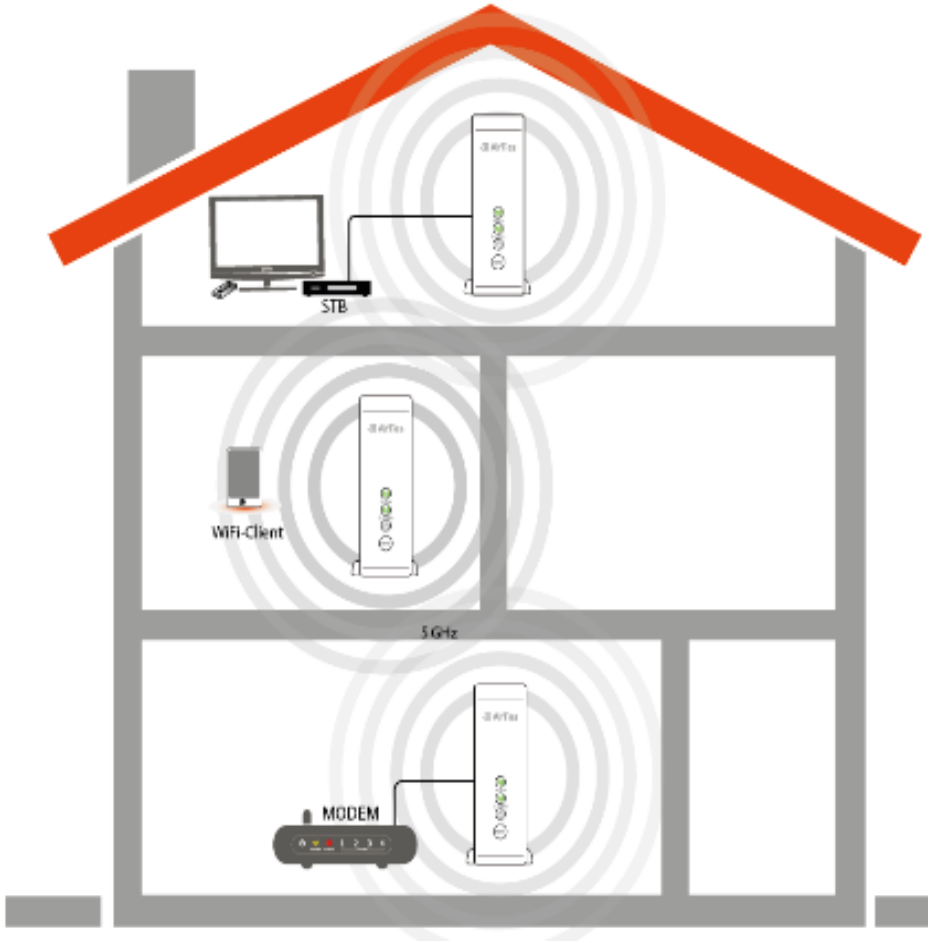
> Poor support from ISP due to no insight

How do we solve it?

Goal

- > Full coverage
- > Handle many devices (IoT)
- > Mobility (Roaming)
- > Managed by the service provider
  - > Support
    - > Reactive & Pre-emptive
  - > Usage insight (trends)
  - > Business insight

More radios (in a mesh)



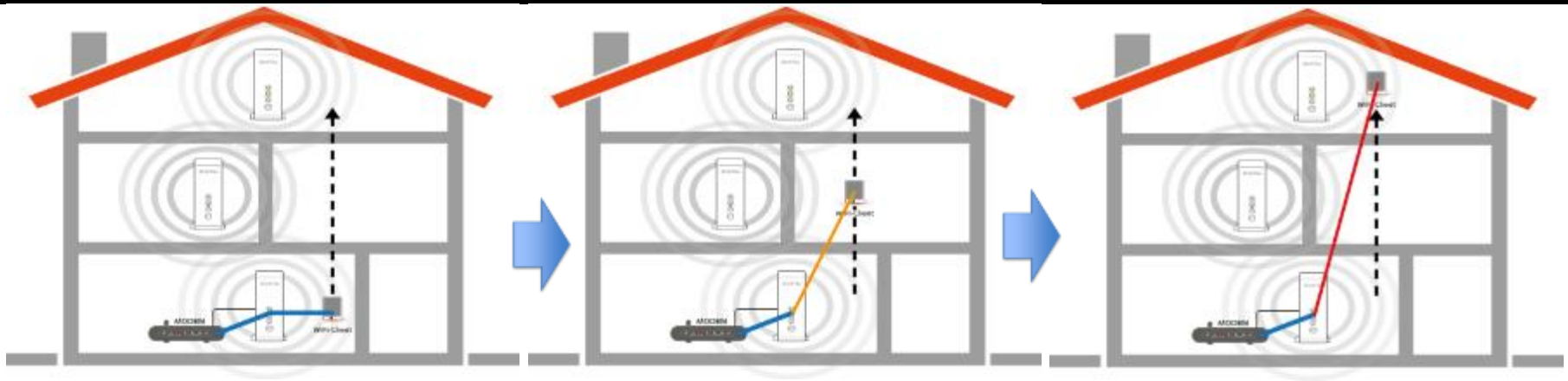
> No bad apples
> APs use WDS not AP|STA => Both bands for clients
> Self healing
> Auto distribution config
> Best path per packet
> Handles many devices

> Proprietary AirTies Mesh – 802.11s not good enough

Goal

- Full coverage
- Handle many devices (IoT)
- **Mobility (Roaming)**
- Managed by the service provider
  - Support
    - Reactive & Pre-emptive
  - Usage insight (trends)
  - Business insight

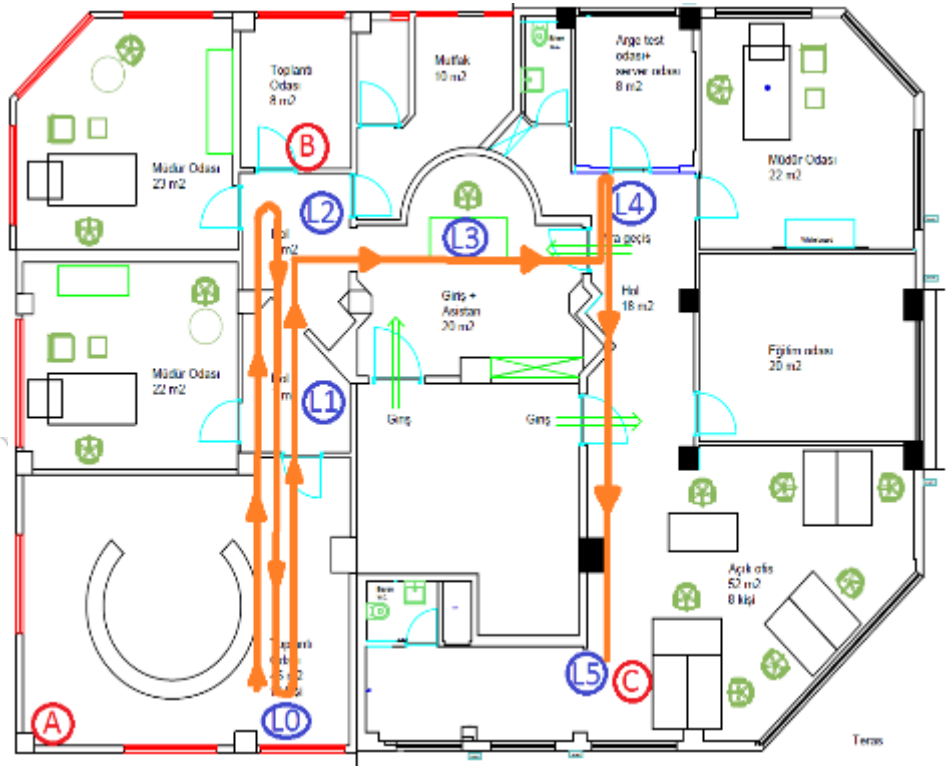
Sticky clients turn into bad apples



> Most smartphones equipped with 1x1 chipsets due to cost, power consumption and size.

> Clients stay connected even though a better connection is available

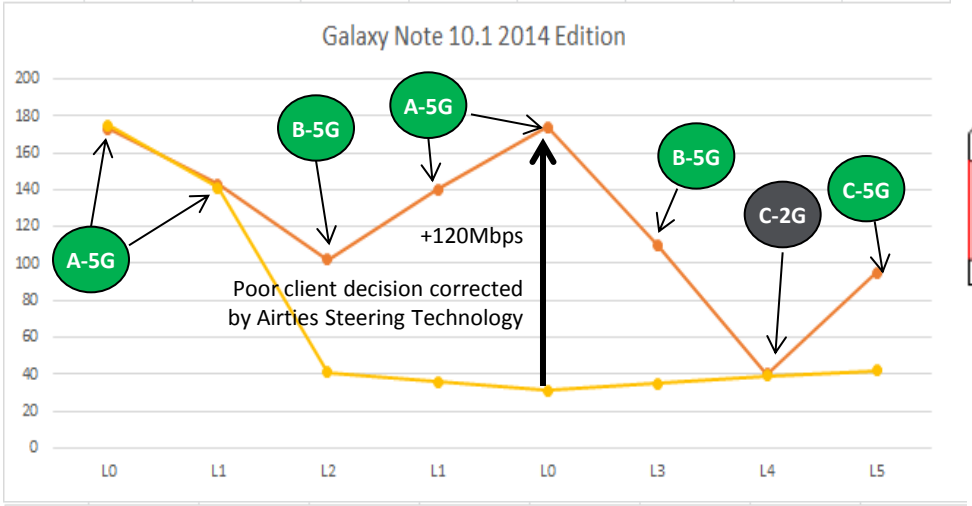
Clients make poor roaming decisions

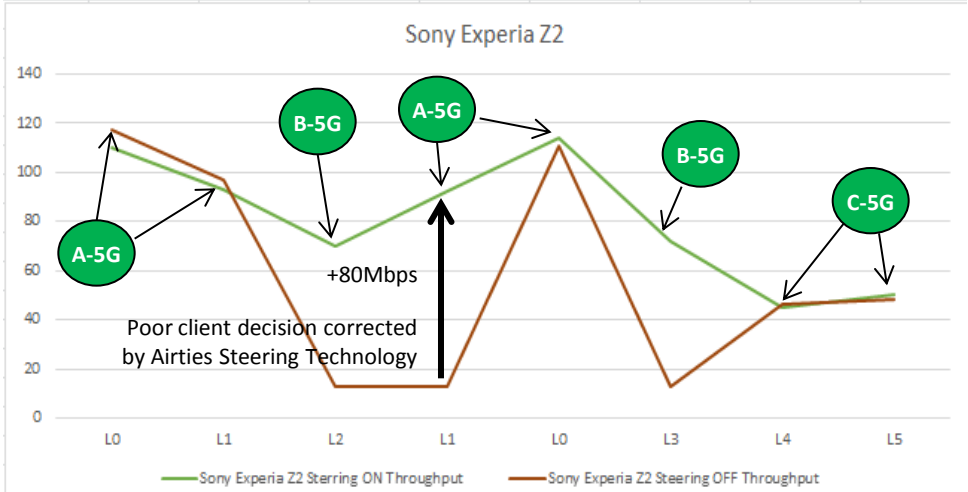


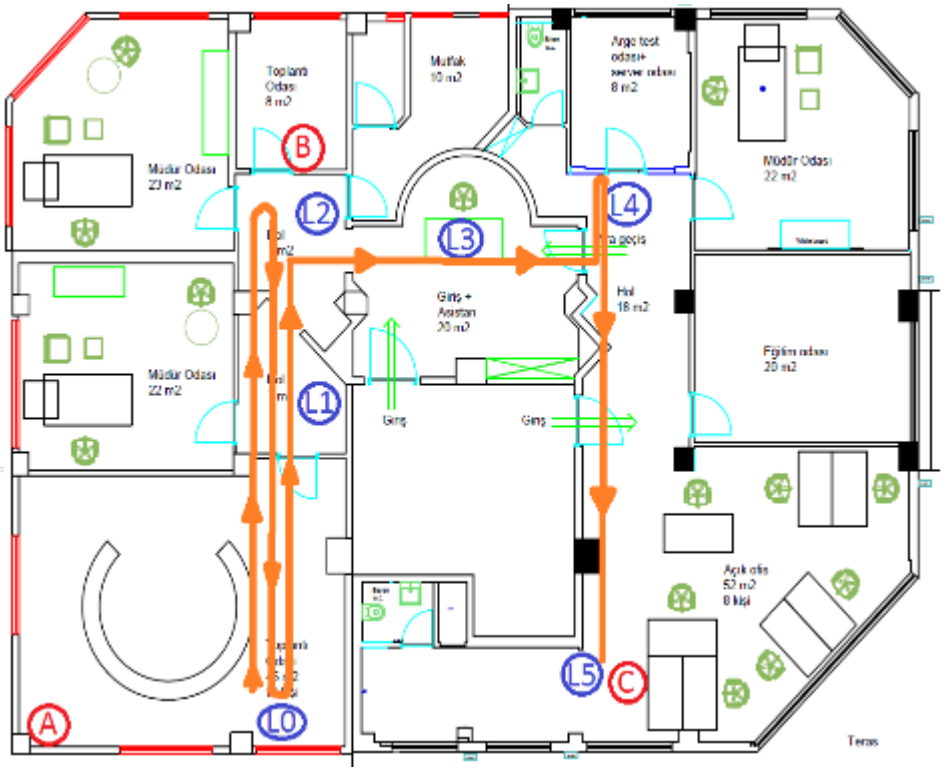
Trajectory Used in Testing Client Roaming Decisions

A, B and C are Repeater Locations
L0,L1,L2,L3,L4 and L5 are measurement points within trajectory

Client and band steering (by APs)







Trajectory Used in Testing Client Roaming Decisions

A, B and C are Repeater Locations
L0,L1,L2,L3,L4 and L5 are measurement points within trajectory

Goal

- Full coverage
- Handle many devices (IoT)
- Mobility (Roaming)
- **Managed by the service provider**
  - Support
    - Reactive & Pre-emptive
  - Usage insight (trends)
  - Business insight

eyeSaaS

Service Providers Need Insight for Better Decision-Making

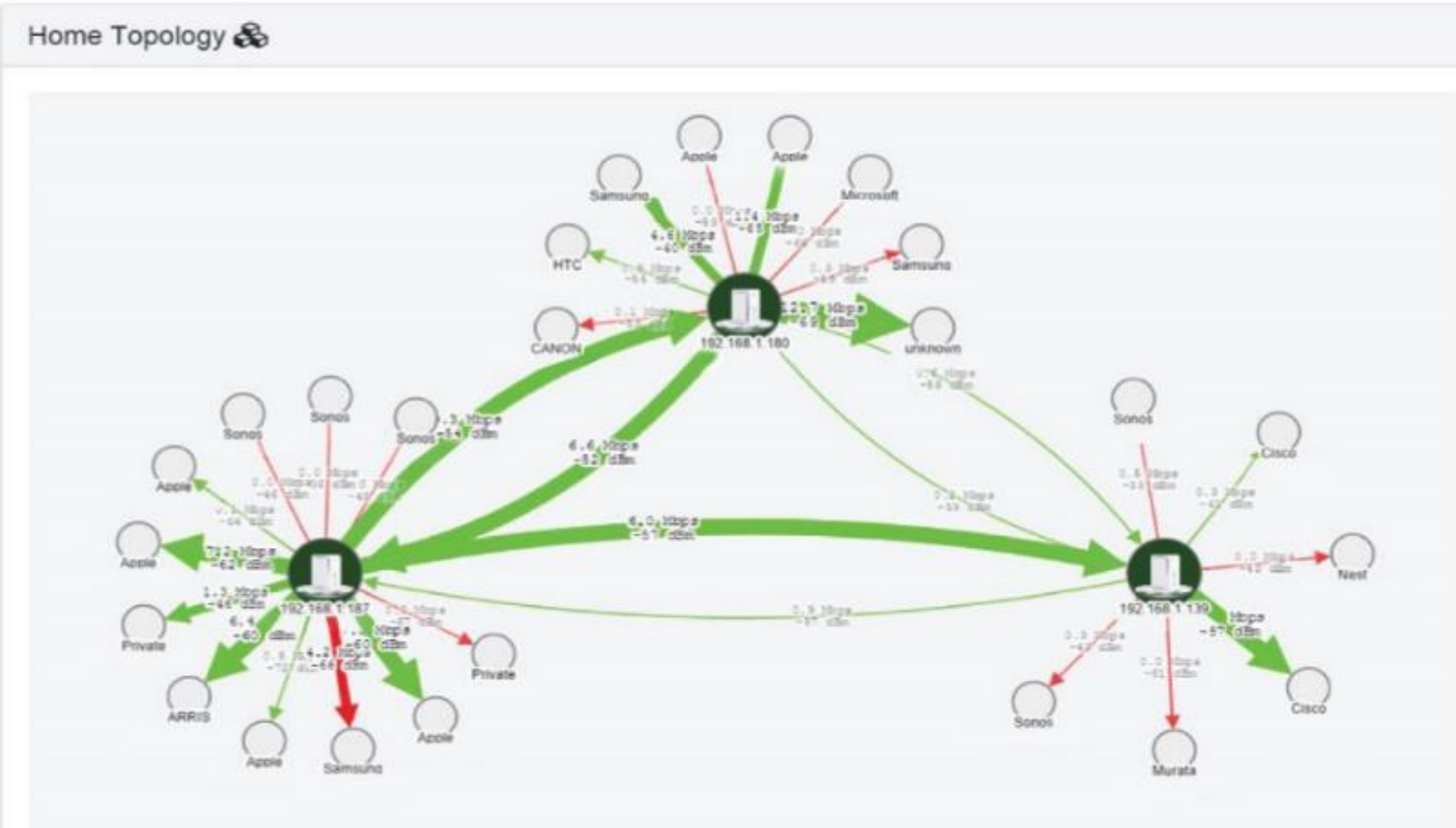
> Real-time diagnostics

> Historical data

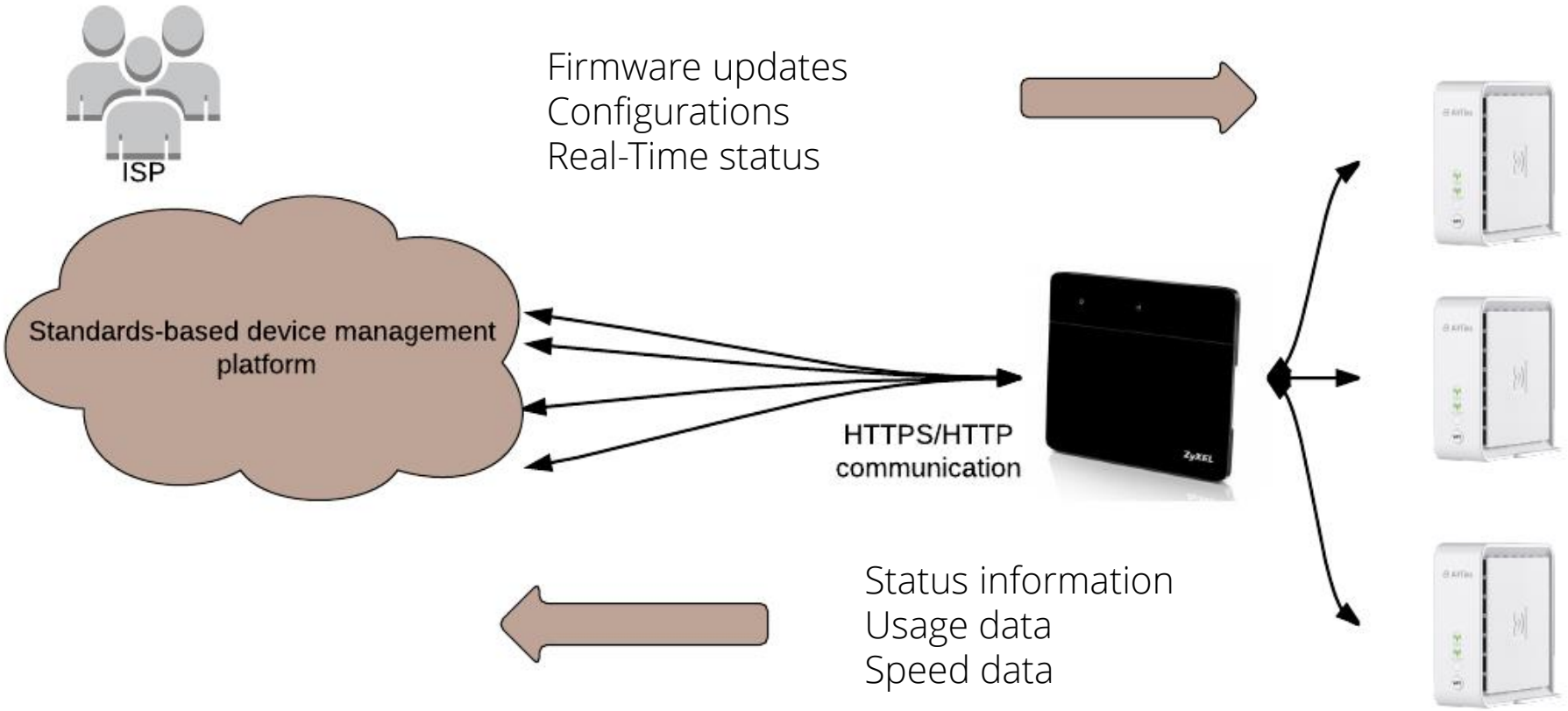
> Usage trends over time

eyeSaaS

Wireless network status



ISP needs insight into customer home network



eyeSaaS

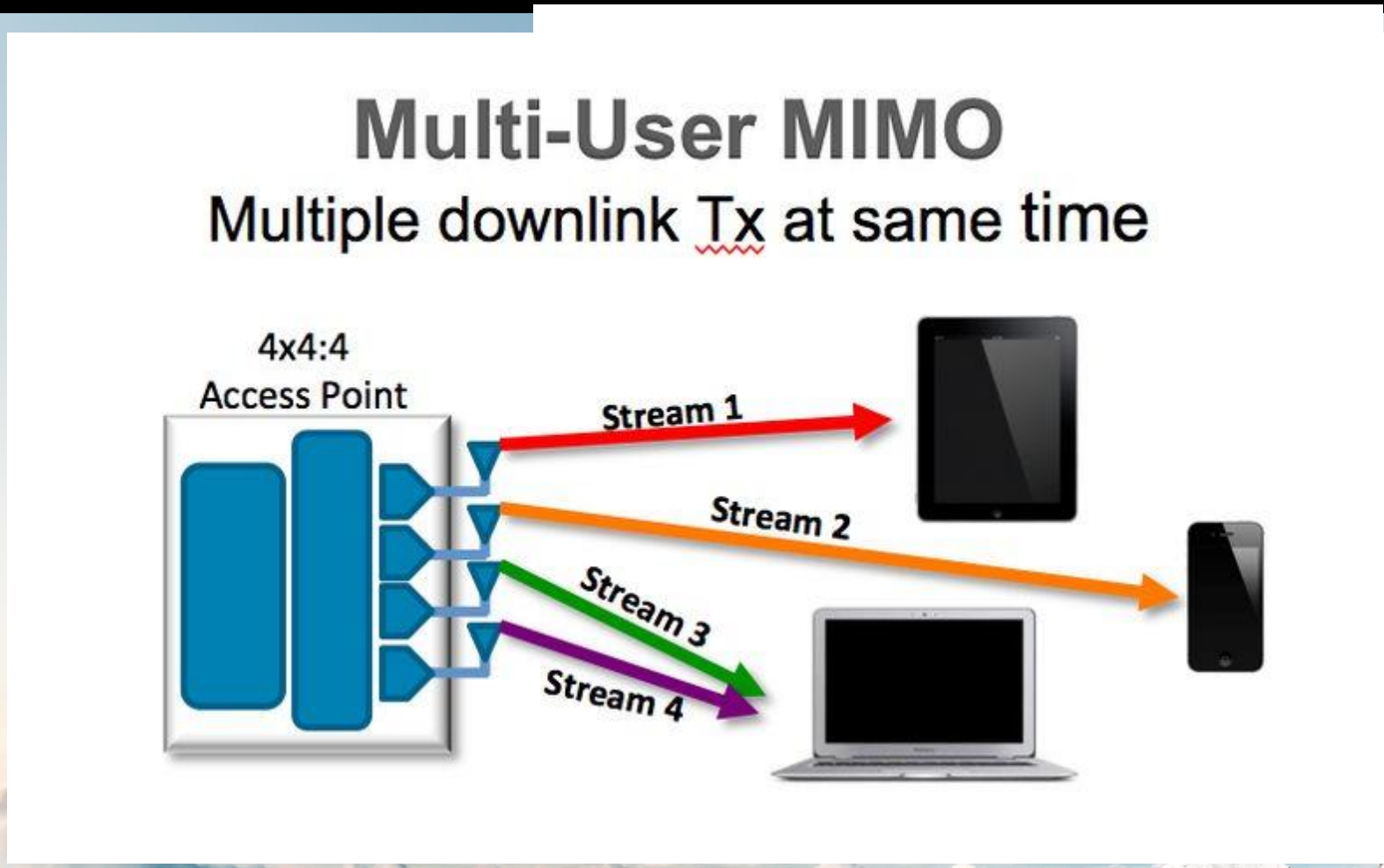
Data usage

1. What data is useful?
2. How do we predict bad apples? Bad customer experience?
3. Impact of IoT
4. ...

Technology “around the corner”

- 8x8 AC
  - Better throughput, same coverage
- MU-MIMO
  - More Airtime, talk to several clients at the same time
- Saturated 5GHz band?
- 40/80/160 MHz
  - More bandwidth, more capacity, less coverage, fewer channels, more saturation
- LTE-U

Technology “around the corner”



Our Partners

AirTies

axiros
Lasting Advantage

ZyXEL

enivest

Zeware