Advisory Committee of CERN Users (ACCU)
September 19\textsuperscript{th} 2017

Wi-Fi evolution in building 40
Agenda

• Former situation
• The new service
• Results
• Current feedback
• What next?
Former Situation

- Building-wide Wi-Fi was installed in 2009-2010
- Service quality has never been satisfactory:
  - Coverage issues
  - Unable to move inside the building without losing connectivity
- Why?
  - The Access-Points installed then were independent devices meaning we couldn’t
    - install more (to provide wider coverage) without causing radio interference (degrading service quality and performance)
    - support roaming as the Access-Points were connected to different (sub-)networks depending on their location in the building
Former Situation

- **Coverage:**
  - 61 Access-Points to cover the full building
  - No Access-Points inside the offices
  - Poor signal in offices with metallic walls
Former Situation

- **Coverage:**
  - 61 Access-Points to cover the full building
  - No Access-Points inside the offices
  - Poor signal in offices with metallic walls
Former Situation

- Mobility inside the building:

From a network point of view, the building was “split” in 8 different zones. Moving between these zones led to a change of IP address and so a network disconnection.
The new service

• Uses a “controller based” Wi-Fi infrastructure, which allows centralisation of user traffic and full mobility within the wireless coverage area.

• 264 Access-Points provide quality coverage throughout the building:
  • Access-Points installed inside the offices
  • For offices with metallic walls: 1 small Access-Point per office

• Part of a Campus-wide project (~200 buildings)
Results

• Coverage
Results

• Coverage
Results

• Mobility inside the building: no IP disconnection while moving inside the building

• Performance observed (September 6th):
  • In the cafeteria with around 10 devices on the neighbouring tables:
    
    ![Download: 203.20 Mbps, Upload: 161.54 Mbps]

  • In a “metallic wall” office:
    
    ![Download: 359.26 Mbps, Upload: 330.55 Mbps]
Results

- During working hours: 600 to 800 concurrent devices connected
Feedback received

- **In August (From Kate Richardson and Michael Hauschild)**
  - “No feedback....but no news is always good news!”
  - “keeping the connection and the IP address while moving in the building works well and is much appreciated.”

- **Last week:**
  - “I'm very happy with the change of quality of the WiFi in my office from close to nonexistent to very good now :-)”
  - “In the offices 40-C-nn the WiFi became better.”
  - “The Wifi connexions are much better now in B40; In rooms where it was difficult before to connect, it is now easy and efficient.”

- Quizzing people in the cafeteria and in the open space (at the beginning of August and again at the beginning of September): users seem to be satisfied

- **ServiceNow tickets:**
  - Two opened by users in building 40 reporting regular random disconnections. We are investigating this issue with the manufacturer. Seven other tickets have been opened reporting a similar issue elsewhere the new infrastructure has been activated; it seems to concern only some MacBook users.
What next?

- Extend outdoor coverage to
  - the terrace between B40 and B42
  - the path between B40 and R1

- Provide a “CERN-Visitors” Wi-Fi service
  - Self registration process for visitors (SMS to mobile phone); no authorisation from CERN contact required
  - Internet access only
    - mail2print service accessible for, e.g., boarding passes
  - To be enabled once the new infrastructure has been activated in R1
    - This at the request of B40 residents to avoid the cafeteria becoming a hot-spot for visitors

- And…
… chase private Access-Points

• These were tolerated when the CERN Wi-Fi service was not sufficient, but not anymore as they interfere with the new service, degrading performance.
• Owners will be contacted in the coming weeks and asked to disable them.
  • Some have already been disabled and their owners are happy with the official service.
• Sample SSIDs seen in the building:
  • “Edward’s iMac”
  • “40/2D012”
  • “Linksys”
  • “ACnetwork”
  • “Chicago-2”