



Enabling Distributed Configuration & Control for WiFiMon Probes

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WiFiMon: Introduction

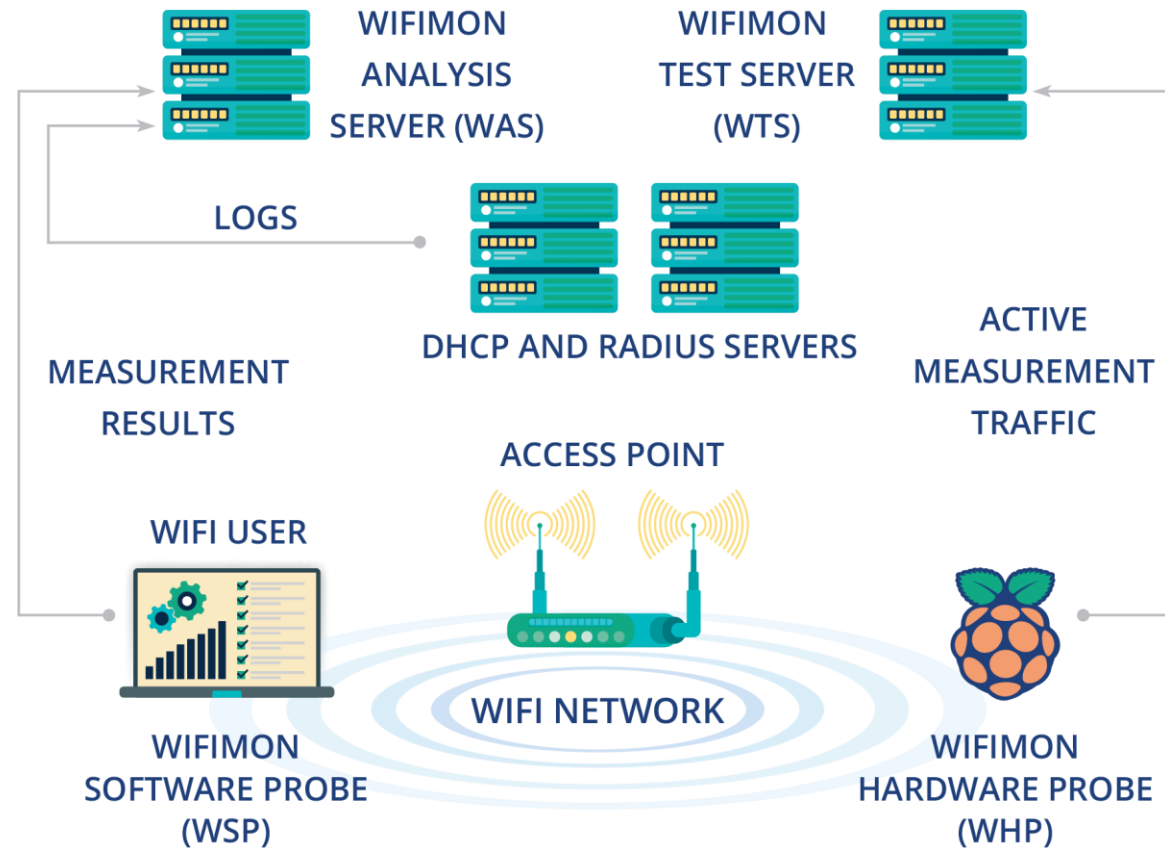


- An open-source wifi network monitoring and performance verification system
- Vendor - independent,
- Transparent to the WiFi network users
- Uses well-known open-source components
- Independent of WiFi network technology
- Captures user's perception of the network quality



How it works

- WiFiMon relies on two monitoring data sources:
 - Crowdsourced measurements
 - Hardware probe measurements
- Performance data collected from active measurements:
 - Calculated by end-devices (WSP's and WHP's)
 - Streamed to the WAS
 - Optionally correlated with RADIUS/DHCP logs for richer analysis
 - Visualized through various dashboards of the WAS;



Who is it for

NRENs



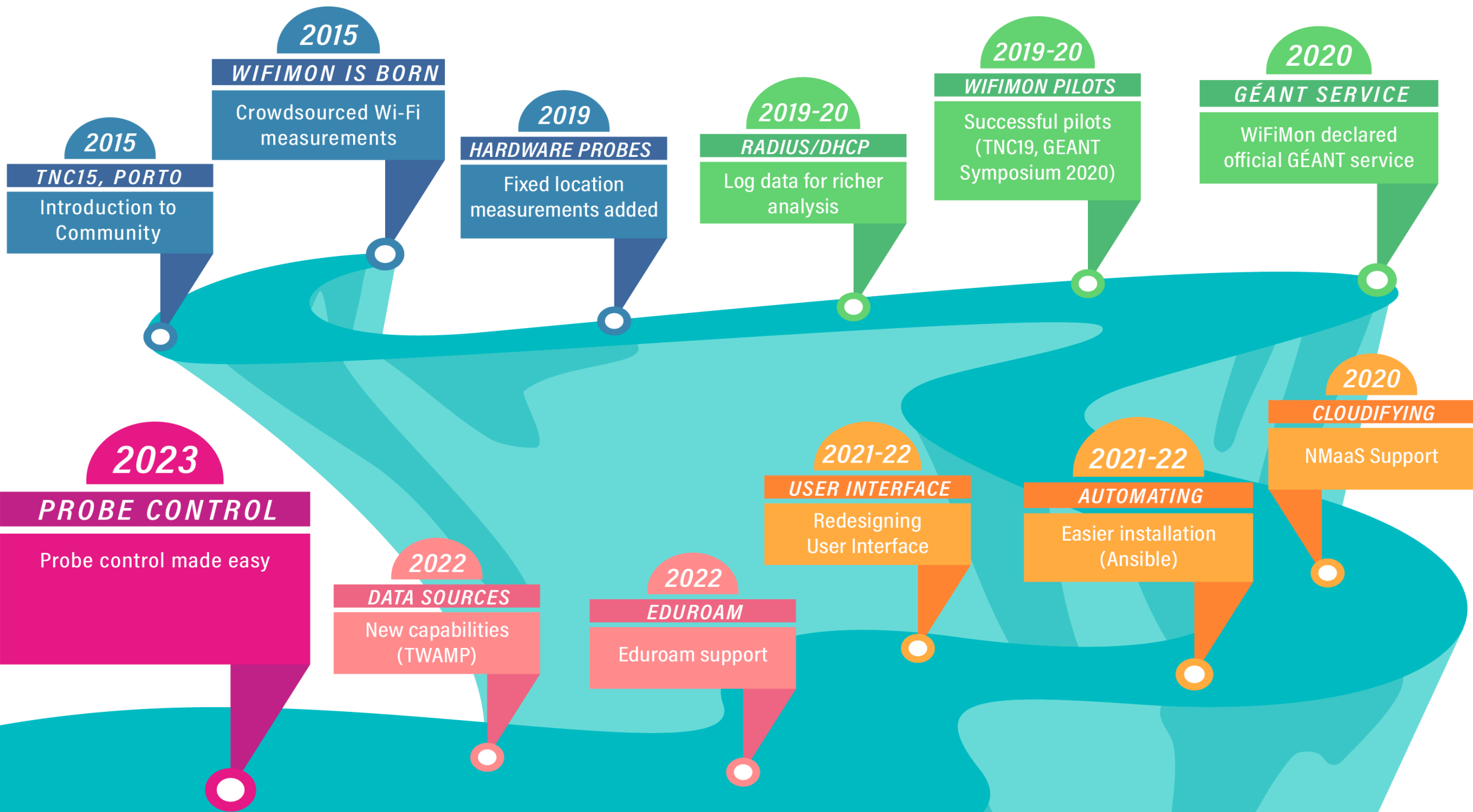
Campus Networks



National Technical
University of Athens

Conference Venues



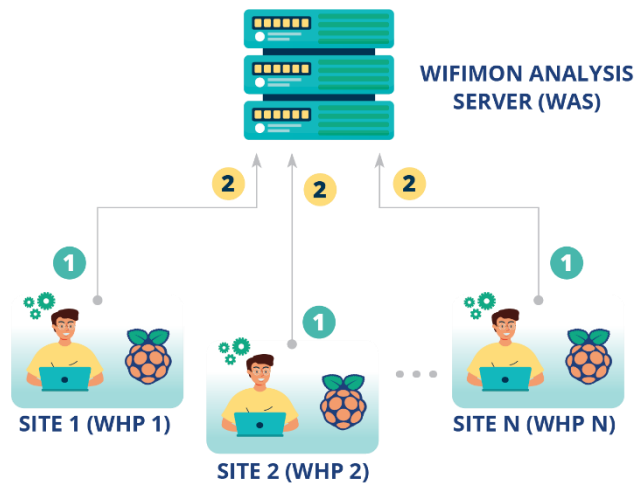


WHP Configuration & Control

Old approach

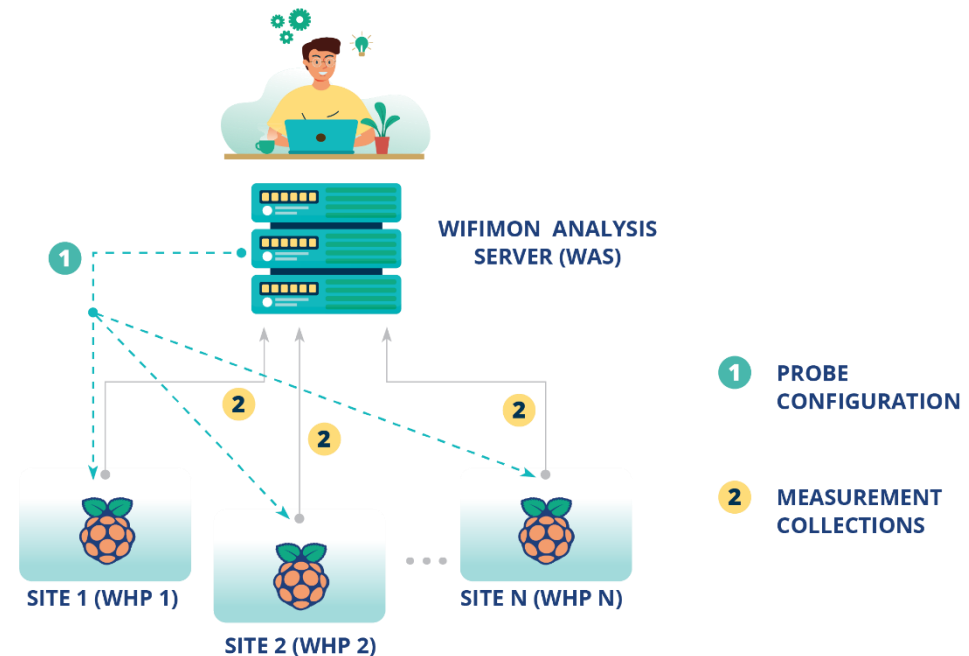
Administrator feedback demonstrated limitations:

- In NAT networks
- In public networks
- Administrators edit config directly



Novel approach required!!!

- ➔ Remote & user-friendly configuration of WHP's from a central point (WAS)
- ➔ Flexibility to control WHP's behind NAT networks



WIFIMON HARDWARE PROBE CONFIGURATION PAGE

Full in the following information to configure the probe

1

PROBES ARE IDENTIFIED BY AN INTEGER NUMBER

Insert WiFiMon Hardware Probe number:

2

PROBES TRIGGER MEASUREMENTS TOWARDS THE WiFiMon TEST SERVER (WTS)

Insert WTS FQDN or IP address:

WHP Configuration Made easy

- Administrators (re)configure WHP's from the WiFiMon UI

Provided data:

- Device ID
- FQDN's/IP addresses of WiFiMon components
- Location information

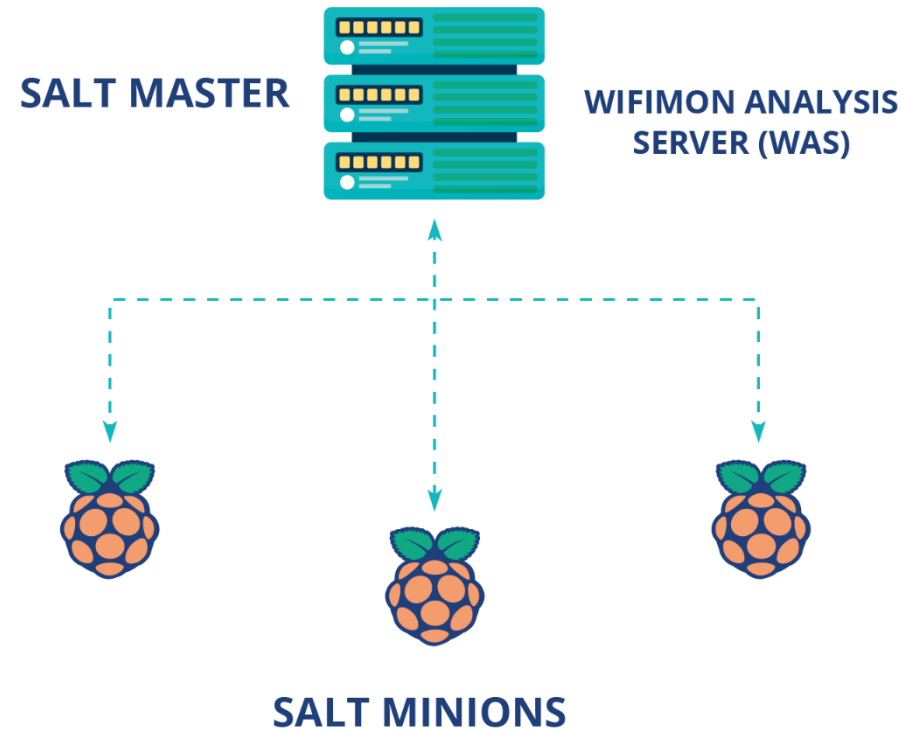
Configuration files are generated based on Jinja2 templates

Remote WHP Configuration Made Possible

- Solution based on the **Salt** infrastructure management tool

WiFiMon Analysis Server → **Salt Master**

WiFiMon Hardware Probes → **Salt Minions**



Remote WHP Configuration Made Possible

- 1 Salt establishes application layer communication:**
 - WHP's are remotely configured from the WAS
 - Remote reconfiguration possible even for WHP's behind NAT
 - Public IP addresses are not required → IP space is not consumed
- 2 Salt includes a ZeroMQ message broker:**

Parallel configuration regardless of the WHP number
- 3 Configuration files** generated from **templates** are transferred from the WAS to the respective probes

Future work

- Automation of probe installation
- Machine learning for performance prediction
- More visualization options





Thank You

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