

Wi-Fi Network Monitoring with GÉANT WiFiMon



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STF 27, Zurich, October 20th 2022

Why a system for WiFi monitoring?



WiFi is among the most popular network access methods



Measuring the performance of the WiFi networks is challenging:

- Shared medium
- Physical obstacles
- Other networks
- Antenna positioning



Measuring only signal strength or link quality from fixed points is not sufficient to get the impression about the Quality of user's Experience (QoE)



Vendor solutions – **closed** and focused on the network equipment (APs)

What WiFiMon offers?



WiFiMon is vendor-independent, open-source monitoring tool transparent to the WiFi network users



Uses well known open-source components:
ELK
Akamai Boomerang
Libretest/Speedtest
NetTest



It is an active monitoring tool which creates a low network overhead (similar to one site visit)



It captures user's perception of the network quality and provides metrics like: throughput, latency, signal strength, link quality,...



The WiFiMon Service



- ***GÉANT Service since 2020!***
- Combines crowdsourced and hardware probe measurements
- Correlation with data from *RADIUS* and *DHCP* logs to strengthen analysis options, e.g. throughput per *Access Point (AP)*
- Who is it for?
 - NREN's
 - Campus Networks
 - Conference Venues
 - Moderate-size Organizations

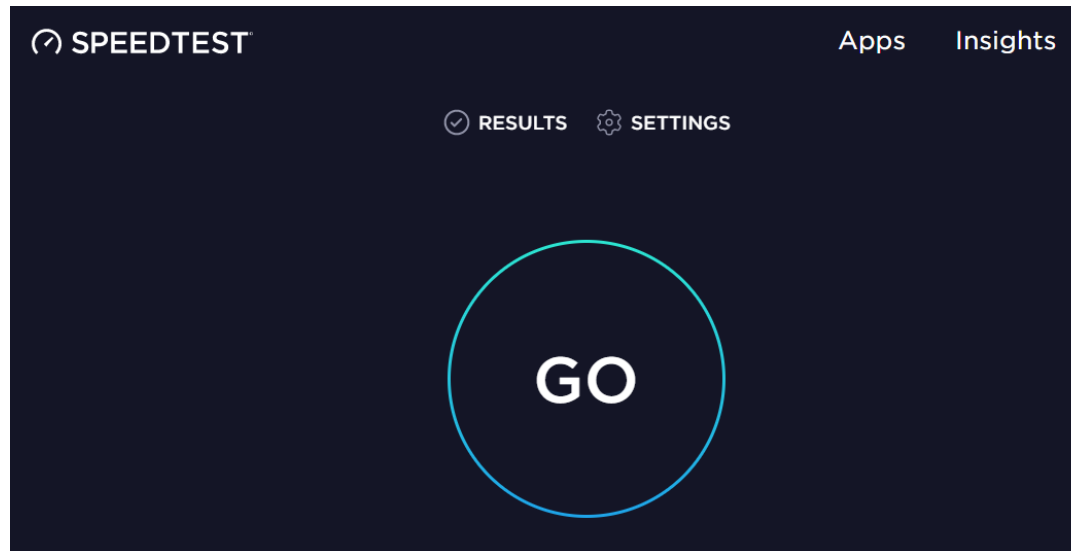
Contribution:

- Detection of Wi-Fi throughput degradation
- Determination of underperforming areas within a Wi-Fi network
- Solve remote user complaints: “my WiFi/Internet is not working!”

WiFiMon vs Other Monitoring Tools



- No requirements for end user intervention or installation of apps
- Centralized view of Wi-Fi performance available to the Wi-Fi administrator



Measurements are triggered:

Results are collected by:

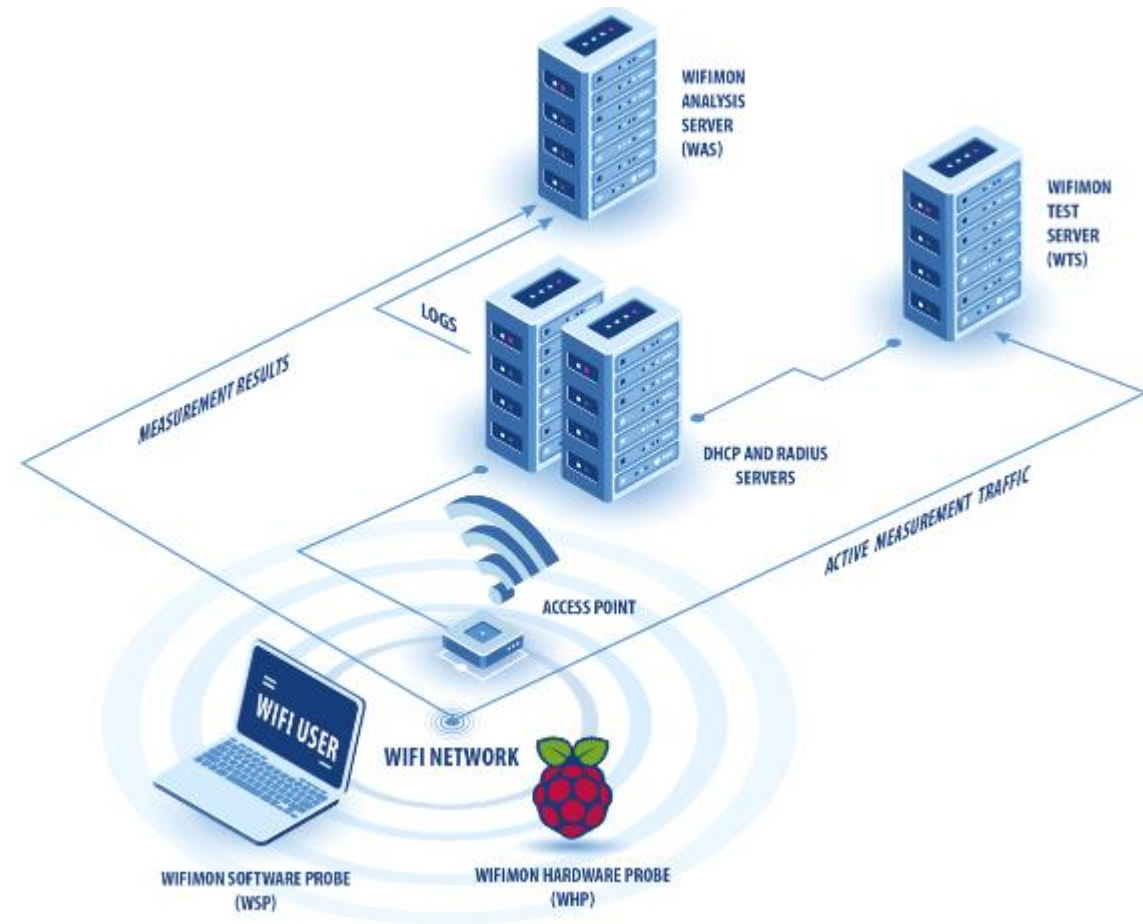
<i>WiFiMon</i>	<i>Ookla Speedtest</i>
automatically by visiting a site	by pressing "GO"
the Wi-Fi administrator	the end users

How WiFiMon Works



WiFiMon Components:

- *WiFiMon Software Probes (WSPs)*
- *WiFiMon Hardware Probes (WHPs)*
- *WiFiMon Test Server (WTS)*
- *WiFiMon Analysis Server (WAS)*



How to Install Wi-Fi Mon

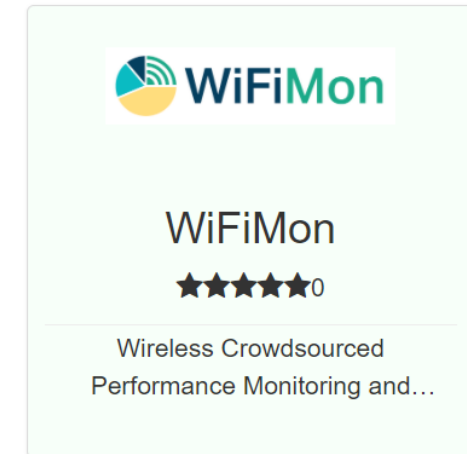
Two Options:

- Institutions install all components **within their premises**
 - **Ansible playbook** for **WAS** automated installation
 - Manual installation for **WTS**
 - All data stay within the institution premises
 - Support from *Wi-Fi Mon* team for all components
- **NMaaS** (more appropriate for testing/trying *Wi-Fi Mon*)
 - Another *GÉANT* Service
 - *Wi-Fi Mon WAS* instance deployed on *NMaaS*
 - *WTS* installation still required by institutions (**should be close to the monitored network**)
 - Support from *Wi-Fi Mon* team for interfacing *WTS* and *Dockerized WAS* on *NMaaS*

Manual WAS installation: Abandoned by *Wi-Fi Mon*



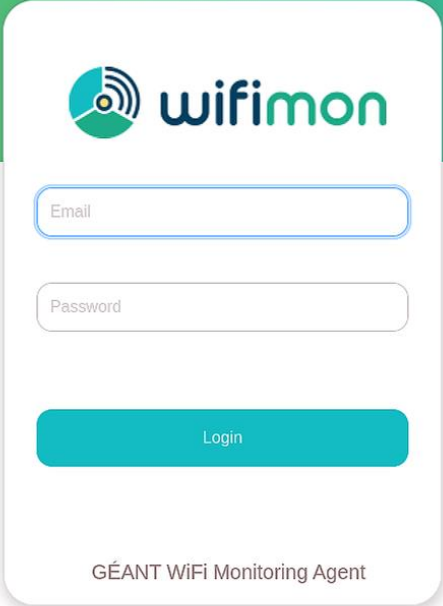
NMaaS Portfolio



New UI since mid-2022



Welcome to WiFiMon!
Wireless Crowdsourced Performance Monitoring
and Verification



The login form is a white rounded rectangle centered on the page. It contains the WiFiMon logo at the top, followed by two input fields for "Email" and "Password", and a teal "Login" button. Below the button, it says "GÉANT WiFi Monitoring Agent" and "© 2016 GÉANT Contact".

Email

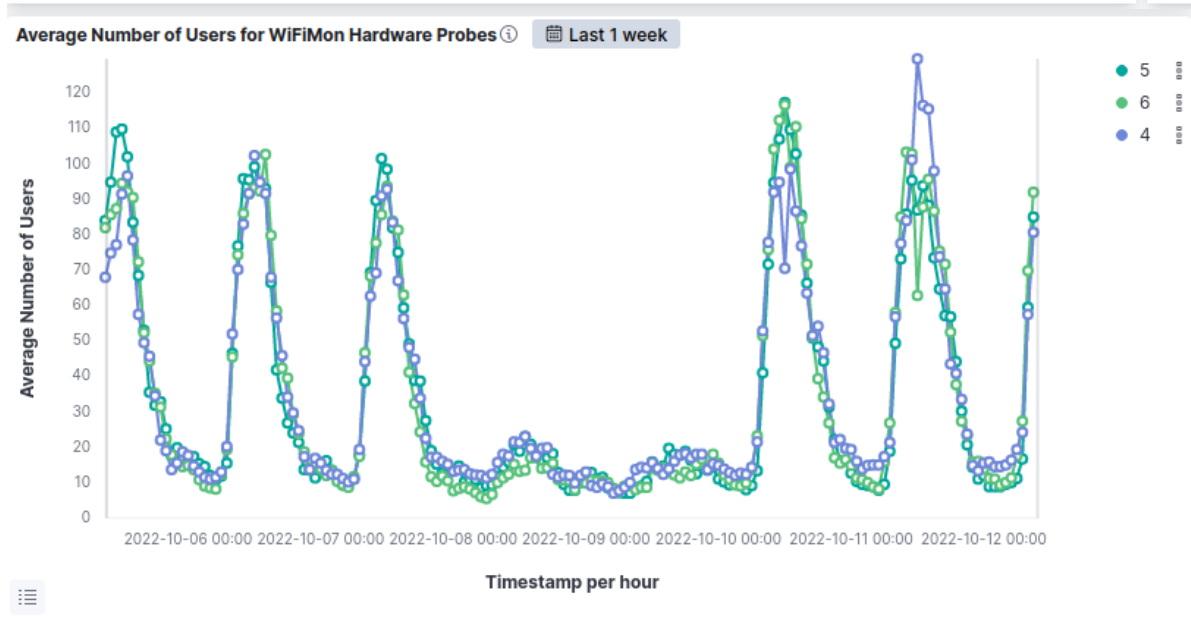
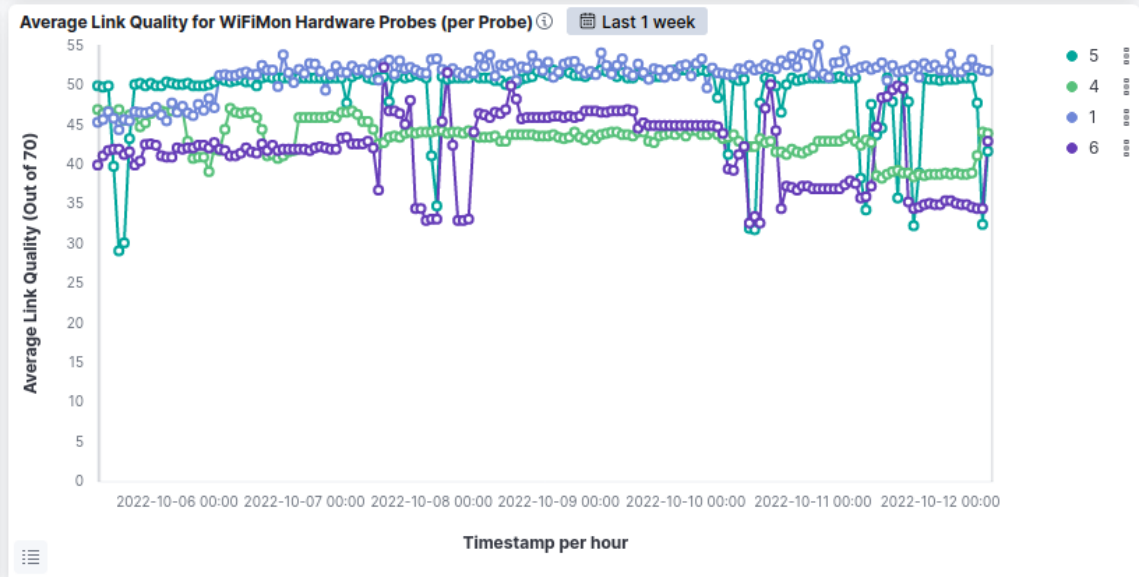
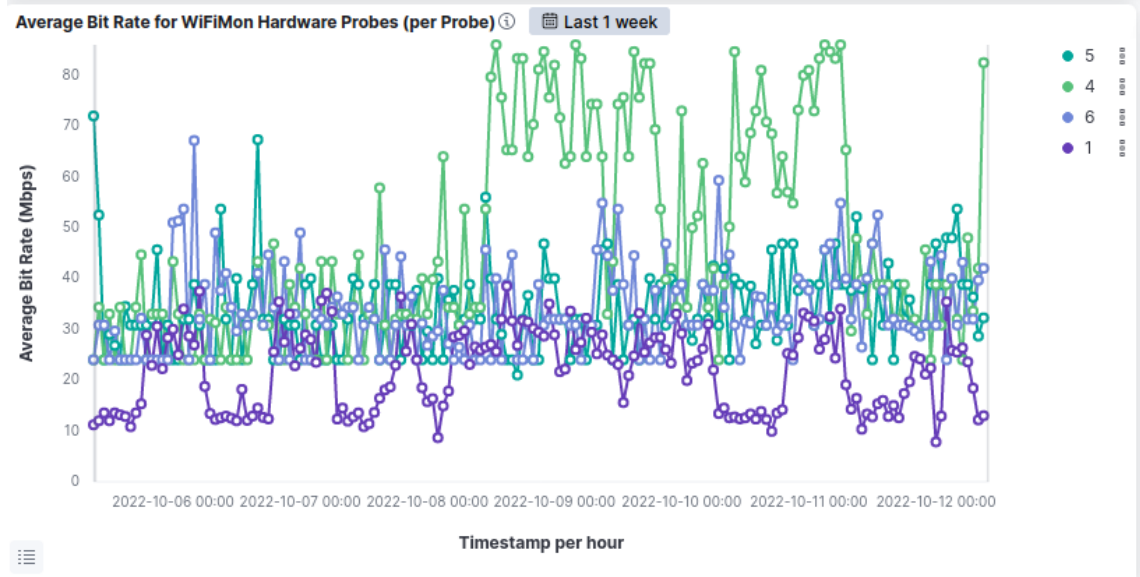
Password

Login

GÉANT WiFi Monitoring Agent

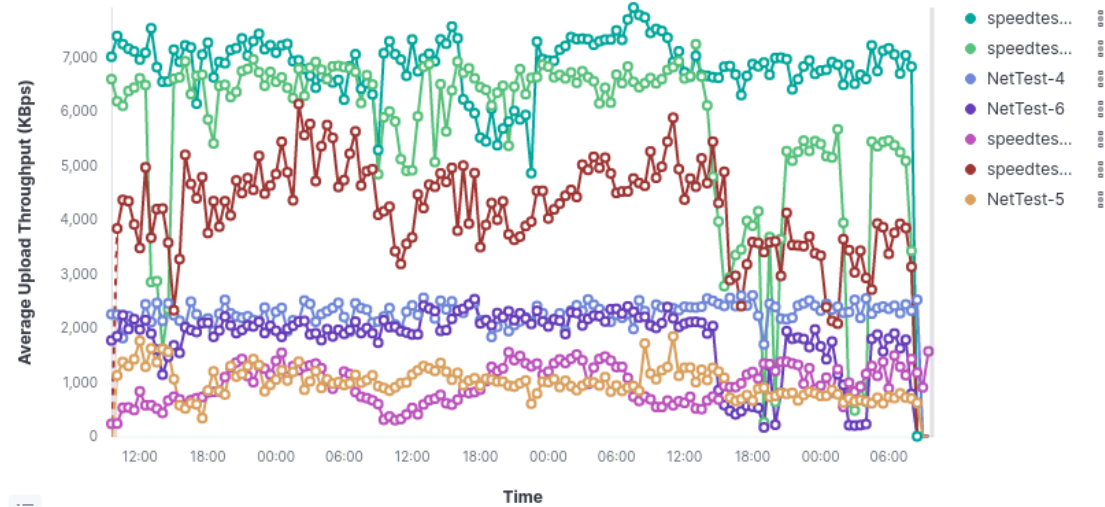
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Metrics and graphs (1)

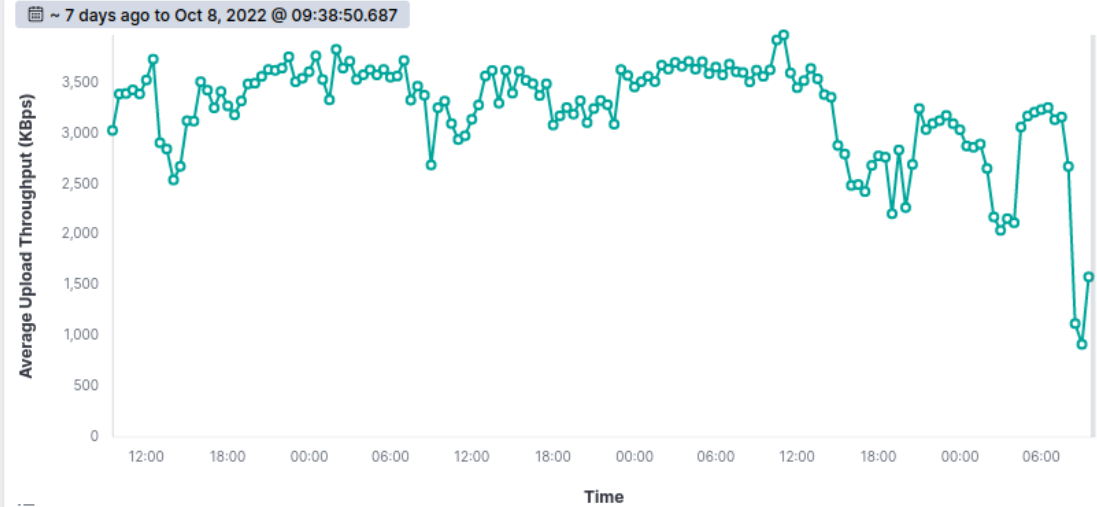


Metrics and graphs (2)

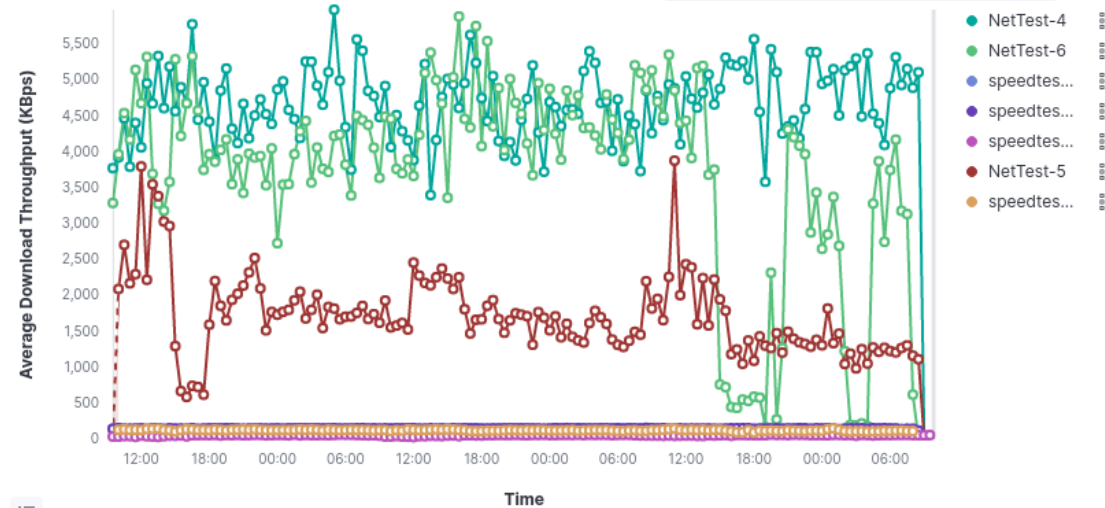
Average Upload Throughput for WiFiMon Hardware Probes (per Test Tool) ~ 7 days ago to Oct 8, 2022 @ 09:37:58.011



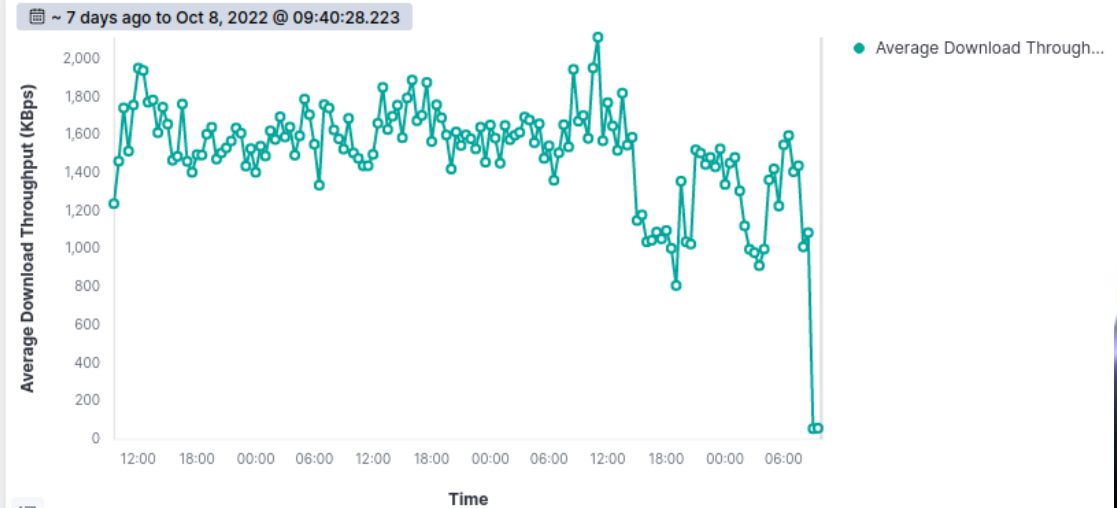
Average Upload Throughput for WiFiMon Hardware Probes (Aggregated all Test Tools) ~ 7 days ago to Oct 8, 2022 @ 09:38:50.687



Average Download Throughput for WiFiMon Hardware Probes (per Test Tool) ~ 7 days ago to Oct 8, 2022 @ 09:40:02.401



Average Download Throughput for WiFiMon Hardware Probes (Aggregated all Test Tools) ~ 7 days ago to Oct 8, 2022 @ 09:40:28.223



WiFiMon resources

- WiFiMon video: <https://www.youtube.com/watch?v=9LuGIF6JSnA>
- GEANT WiFiMon page: <https://network.geant.org/wifimon/>
- WiFiMon wiki page: <https://wiki.geant.org/display/WIF>
- WiFiMon code:
<https://bitbucket.software.geant.org/projects/WFMON/repos/agent/browse>
- WiFiMon Infoshare: <https://www.youtube.com/watch?v=VXQV2zWRKgo>
- Publications and Presentations:
<https://wiki.geant.org/display/WIF/WiFiMon+Publications>

Thank you

Any questions?

Email: wifimon-ops@lists.geant.org

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