

Apr. 25, 2023

WBA OpenRoaming Implementers Call

Behind the Scenes OpenRoaming implementation in TOKYO FREE Wi-Fi



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A part of this work was supported by the Beyond 5G R&D Promotion program at National Institute of Information and Communications Technology (NICT) in Japan.

Renewed “TOKYO FREE Wi-Fi” supports OpenRoaming

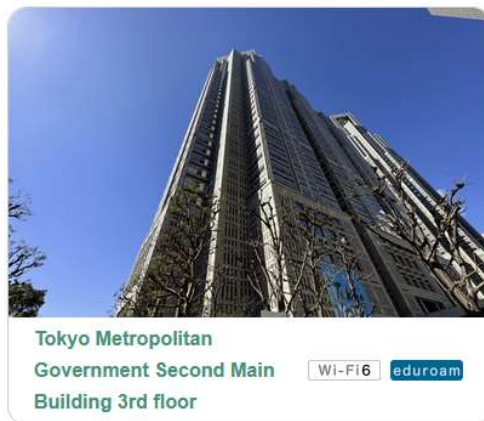
- Released on Apr. 1, 2023
- Tokyo Metropolitan Government + KDDI / Wire & Wireless (Wi2)
- Enhanced security, safety, and usability. 😊



<https://wi-fi.metro.tokyo.lg.jp/en/>

OpenRoaming hotspots provided by the Tokyo Met. Govt.

- 4 new sites in Apr. 2023
- 600+ sites planned in 2023



Smart Poles and Digital Signages
in Nishi-Shinjuku Area (2021-2022)



The system wasn't built in a day...

- 2017-2018: Participated in the City Wi-Fi Roaming
- 2018: Launch of Cityroam
- 2019: OpenRoaming
- 2020: OpenRoaming adoption in Cityroam
- 2021: Nishi-Shinjuku Smart Poles project by TMG
- 2022: TMG adopted Cityroam (pilot service)
- 2023: TOKYO FREE Wi-Fi with OpenRoaming (Cityroam's backend)

... but the development can be accelerated.

Nationwide Cityroam deployment in Japan

- Cityroam, a federation providing secure roaming system for Public Wi-Fi since 2018.
- All venues provide both **eduroam** and **OpenRoaming** (2020-).
- Multi-operator, multi-vendor
- **Unique venues** across the nation.
(90+ spots)



cityroam (as of Apr. 2023)



Nishi-Shinjuku Smart Poles by Tokyo Met. Govt.

- PoC and pilot service in Smart City project.
- eduroam, Cityroam, and OpenRoaming on 22 smart poles. (2021-2022)
- **Pilot for the next generation Free Wi-Fi in Tokyo. (2022-2023)**



Govt.
Building

Shinjuku
Station

eduroam
accesses: 75%

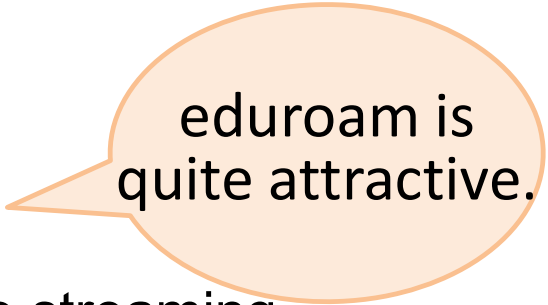
Demands and Challenges

- Value propositions to owners and end-users
 - Lack of future vision for digital society
 - Wi-Fi for tourism isn't enough.
 - Users are so accustomed to Open Network + PSK.
 - People don't care about security so much.
- Onsite / Online Sign-Up
 - Support for tourists having *no internet connection at all*.
- Municipalities want/need to accept as many users as possible.
 - Still so many old devices
(Android 9, 10, iOS 13, 14, PC with no Passpoint support, ...)
- Trouble-free
 - Some glitches and incompatibilities on some devices.

Value proposition

■ Support for Research & Education

- Not only high-edu but also K-12.
- Allow kids to use digital textbooks and video streaming *at various places.*



eduroam is quite attractive.

■ Support for Digital Society

- Everyone needs access to digital services.
- Multi-operator, multi-vendor scheme.
- Usage data analysis / Disaster mitigation
- High speed & stability: Wi-Fi 6/6E + 5G
- Wi-Fi as an infrastructure for IoT

■ Tourism

- Wi-Fi roaming is a high-profile feature.
- SIM-based authentication by telecom operators is in high demand.

Sign-up and onboarding

App-free, easy onboarding.

Features of TOKYO FREE Wi-Fi

POINT 01
Security for your peace of mind
Eliminates anxiety about public Wi-Fi spots using a secure communication method
Encrypted Wi-Fi with enhanced security makes it safer! Moreover, you can rest assured that you will not be connected to a fake access point!

POINT 02
No dedicated apps required
Ready to use with one-time setup
Can be set up and used immediately using the standard Wi-Fi function on smartphones and computers.

POINT 03
Connects automatically
Automatically connects just by approaching the Wi-Fi hotspot without login or re-registration.

POINT 04
Compatible with all kinds of devices
Compatible with PCs and tablets, and allows you to stay connected when studying and working remotely! Wi-Fi can be used on multiple devices at the same time.

[Register now](#)

Federated Onboarding with web-based provisioning (+ legacy email-based registration)

東京都 TOKYO METROPOLITAN GOVERNMENT

TOKYO FREE Wi-Fi

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1 2 3 4 5

Verify your identity

Authentication with Google, Apple, or LINE ID is required to use this service. Please select the account you would like to use.

[Google](#)

[Apple](#)

[LINE](#)

[Return](#)

Information on conventional Web login type free Wi-Fi services

TOKYO FREE Wi-Fi

Sign-up users are growing, but eduroam and SIM-auth, provided by Cityroam, still account for high percentage.

Technical problems and workarounds

- Passpoint doesn't always work well on Android 9, 10.
Passpoint sometimes become unusable on iPhone/iPad (until factory reset).
No Passpoint support on ChromeOS.
 - Provide a common SSID “cityroam” for 802.1X use.
 - Provide instructions for manual setting.
- Android enforces domain name matching.
 - Align FQDN with that of server cert.
(This restriction makes it difficult to use a common FQDN in a multi-operator roaming environment.)
- Some interoperability issues between AP and User Device.
 - Set 11w to “Enabled (allow unsupported clients)” on Meraki APs
..., etc.

For more information,



<https://wballiance.com/resource/openroaming-case-study-japan-by-cityroom/>

A news article snippet from the Wireless Broadband Alliance. The header includes the WBA logo and a "20th ANNIVERSARY" badge. The main headline reads: "KDDI and Wire & Wireless announce a public Wi-Fi infrastructure supporting OpenRoaming". Below the headline is a sub-headline: "Achieves an internationally standardized secure Wi-Fi connection environment for local residents and domestic and international travelers". The body text describes the partnership between KDDI and Wire & Wireless to develop a free Wi-Fi network platform supporting OpenRoaming, starting in April 2023. It mentions the "TOKYO FREE Wi-Fi" service and provides a link to the service environment. A diagram on the right illustrates the "Image of OpenRoaming Utilization in Tokyo", showing a user signing in via an app, connecting to a "TOKYO FREE Wi-Fi" network, and then seamlessly connecting to other "FREE Wi-Fi" networks across different municipalities (A, B, C) using a "Public Wi-Fi platform". The diagram also shows a user connecting to a "Public Wi-Fi platform" and then to a "Public Wi-Fi platform" via an airplane. Social media icons for Facebook, Twitter, and LinkedIn are visible on the left side of the article snippet.

<https://wballiance.com/kddi-and-wire-wireless-announce-a-public-wi-fi-infrastructure-supporting-openroaming/>