

# Some experiences with OpenRoaming...

# Disclaimers...

- I'm not an OpenRoaming or MADINAS expert, just a NOC Monkey
- Before running an IETF-wide experiment, I wanted experience with setup, troubleshooting, etc.
- These are just my observations...
  - Might be wrong....
- Don't try this at home...
  - I did so you don't have to :-P

# MADINAS Charter

The group will generate a Best Current Practices (BCP) document recommending means to reduce the impact of RCM on the documented use cases while ensuring that the privacy achieved with RCM is not compromised.

# Apple MAC randomization

In the latest beta version of iOS 14, Apple implemented their own improved version of MAC randomization for devices running iOS. Similar to Android 10, iOS 14 devices will use a randomized MAC address by default when both scanning and connecting to most wireless networks. Additionally, iOS has added an extra layer of privacy protection: devices with the randomization feature turned on will rotate their MAC address every 24 hours after connecting to a wireless network.

Rotation appears not active, but this seems to be the direction things are headed...

# Android

Under the non-persistent randomization type, which is used for some networks in Android 12 or higher, the Wi-Fi module re-randomizes the MAC address at the start of every connection or the framework uses the existing randomized MAC address to connect to the network. The Wi-Fi module re-randomizes the MAC address in the following situations:

- The DHCP lease duration has expired and more than 4 hours have elapsed since the device last disconnected from this network.
- The current randomized MAC for the network profile was generated more than 24 hours ago. MAC address re-randomization only happens at the start of a new connection. Wi-Fi won't actively disconnect for the purpose of re-randomizing a MAC address.

Rotation appears disabled by default, but this seems to be the direction things are headed...



Phone



Access  
Point



Radsec  
Proxy



IdP



IdP

▼ General

Name OpenRoaming\_Test

Network Type public free ▼

Venue residential private ▼

HESSID ▼

Internet ☒

ASRA ☐

ESR ☐

UESA ☐

▼ ANQP

3GPP Raw

▼ 310/410 ▲

▼ 310/280 ▲

3GPP Info

▼ 310/150 ▲

▼ 313/100 ▲

Authentication Types ▼

Connection Capabilities ▼

Domain Names ▼ google.openroaming.net ▲

▼ apple.openroaming.net ▲

IPv4 Availability public ▼

IPv6 Availability not available ▼

6:31



## OpenRoaming

Congratulations! You have successfully signed in using your Google account.

We care about your safety & privacy. To ensure your safety and privacy while connected, we'll need to install a secure credential.

When asked to install a Hotspot network, please tap "Allow" to complete the setup.



Share my email with OpenRoaming partners

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6:32



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Unchecking this may limit your ability to connect to OpenRoaming networks, as some networks may require an email address to connect you.

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## Configuration

[Account](#)[Devices](#)

### Account Details



Google Account

user123@kumant.net

Share my Email ID



[Logout](#)

[Delete Account](#)





# OpenRoaming Privacy Policy

## 1. **Collection of PII**

1. In order to provide the service, each OR Participant may collect End-User personally identifiable information (PII) (including End-User MAC addresses, End-User IP Addresses, and End-User EAP identities).
2. Each OR Participant may additionally collect other permanent identifiers if End-User explicitly accepts to the collection of such permanent identifiers.
3. An OR Participant operating as an IDP may collect other permanent identifiers (e.g., e-mail) associated with End User registering for the Service, when accomplished directly through the IDP.

# Logs

```
$ wkumari@wkumari-1 ~ sudo journalctl -u radsecproxy | grep Accept
```

```
Jul 17 18:30:26 wkumari-1 radsecproxy[3951681]: (3952689) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 0605bebd-4eb3-413c-bb49-917ae96b70a0@openroaminggoogle from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.159.8)
```

```
Jul 17 18:33:19 wkumari-1 radsecproxy[3951681]: (3952689) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 0605bebd-4eb3-413c-bb49-917ae96b70a0@openroaminggoogle from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.159.8)
```

```
Jul 17 18:34:24 wkumari-1 radsecproxy[3951681]: (3952793) Access-Accept for user anonymous@wba.3af521.net stationid 76-A7-AA-1E-48-27 from dynamic_radsec.wba.3af521.net to 31.133.128.0/18 (31.133.159.8)
```

```
Jul 17 18:43:38 wkumari-1 radsecproxy[3952943]: (3953092) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 0605bebd-4eb3-413c-bb49-917ae96b70a0@openroaminggoogle from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.159.8)
```

```
Jul 17 18:49:01 wkumari-1 radsecproxy[3953147]: (3953289) Access-Accept for user anonymous@wba.3af521.net stationid 76-A7-AA-1E-48-27 from dynamic_radsec.wba.3af521.net to 31.133.128.0/18 (31.133.159.8)
```

```
Jul 17 19:05:27 wkumari-1 radsecproxy[3953403]: (3953664) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 0605bebd-4eb3-413c-bb49-917ae96b70a0@openroaminggoogle from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.159.8)
```

```
Jul 17 19:07:03 wkumari-1 radsecproxy[3953403]: (3953664) Access-Accept for user anonymous@apple.openroaming.net stationid 42-11-18-B4-18-73 cui gbq8nx5n2t@privaterelay.appleid.com from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.159.8)
```

# Logs

From my **iPhone** connecting:

Access-Accept for user anonymous@apple.openroaming.net stationid **52-E1-F5-5D-C4-96**

**cui 0605bebd-4eb3-413c-bb49-917ae96b70a0@openroaminggoogle** from **dynamic\_radsec.apple.openroaming.net** to  
31.133.128.0/18 (31.133.159.8)

# Logs

From my **iPhone** connecting:

Access-Accept for user anonymous@apple.openroaming.net stationid **52-E1-F5-5D-C4-96**

**cui 0605bebd-4eb3-413c-bb49-917ae96b70a0@openroaminggoogle** from **dynamic\_radsec.apple.openroaming.net** to 31.133.128.0/18 (31.133.159.8)

From my **iPad** connecting:

Access-Accept for user anonymous@apple.openroaming.net stationid **2E-8D-2E-E5-84-0D**

**cui 0605bebd-4eb3-413c-bb49-917ae96b70a0@openroaminggoogle** from **dynamic\_radsec.apple.openroaming.net** to 31.133.128.0/18 (31.133.158.215)

▼ ANQP

3GPP Raw

▼ 310/410 ▲

3GPP Info ▼ 310/280 ▲

▼ 310/150 ▲

▼ 313/100 ▲

Authentication Types ▼

Connection Capabilities ▼

Domain Names ▼ apple.openroaming.net ▲

▼ google.openroaming.ne ▲

IPv4 Availability public ▼

IPv6 Availability not available ▼

Realms ▼

Realms Raw ▼

▼ AA146B0000 ▲

Roaming OIS ▼ 5A03BA0000 ▲

▼ BAA2D00000 ▲



▼ ANQP

3GPP Raw

▼ 310/410 ▲

3GPP Info ▼ 310/280 ▲

▼ 310/150 ▲

▼ 313/100 ▲

Authentication Types ▼

Connection Capabilities ▼

Domain Names ▼ apple.openroaming.net ▲

▼ google.openroaming.ne ▲

IPv4 Availability public ▼

IPv6 Availability not available ▼

Realms ▼

Realms Raw ▼

▼ AA146B0100 ▲

Roaming OIS ▼ 5A03BA0100 ▲

▼ BAA2D00100 ▲

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Share my email with OpenRoaming partners

[I Understand](#)



# Logs

From **Warren Kumari's iPhone** connecting with the (default) of share my email:

Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui **warren@kumari.net** from dynamic\_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.158.215)

From **Joe Clarke's iPhone** connecting with the (default) of share my email:

Access-Accept for user anonymous@apple.openroaming.net stationid DA-5A-B8-72-EF-93 cui **joe.marcus@gmail.com** from dynamic\_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.158.215)

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Questions / tomatoes...





# Logs

2PU0qY7JlG9/v+eDYMm4aG@wlan.mnc410.mcc310.3gppnetwork.org  
2PWNWViqM8D/IOAxDP Eeb0E@wlan.mnc410.mcc310.3gppnetwork.org  
2PivKicUKyH83vmW+KMGfA3@wlan.mnc410.mcc310.3gppnetwork.org  
2PnJzhmxUMH7VuWfN2qGhWi@wlan.mnc280.mcc310.3gppnetwork.org (AT&T Mobility)  
2PnZeKtNCCS9BDR0524GMLH@wlan.mnc280.mcc310.3gppnetwork.org (AT&T Mobility)  
2PnzWFjndbi9rhrvhPFz+NY@wlan.mnc280.mcc310.3gppnetwork.org (AT&T Mobility)  
2REX1cEjCk//hYMy7q1QJNL@wlan.mnc280.mcc310.3gppnetwork.org  
2Na46wHFFmBVK2Hm+MX5ZFQ@wlan.mnc150.mcc310.3gppnetwork.org  
2Rq3z9H3M7hMFN9s31XrW+s@wlan.mnc410.mcc310.3gppnetwork.org  
2Tx7Ak+7ibexQzbsWssGBAr@wlan.mnc280.mcc310.3gppnetwork.org

anonymous@apple.openroaming.net  
anonymous@samsung.openroaming.net  
anonymous@wba.3af521.net

... and 49 more...

# Logs

## ▼ ANQP

**3GPP Raw**

**3GPP Info**



310/410



310/280



310/150



313/100



# Logs

```
Jul 24 14:29:44 wkumari-1 radsecproxy[831222]: (831246) tlscconnect: TLS connection to dynamic_radsec.apple.openroaming.net (idp.openroaming.net port 2083), subject CN=idp.openroaming.net,O=Cisco,ST=CA,C=US up
Jul 24 14:29:44 wkumari-1 radsecproxy[831222]: (831245) tlscconnect: TLS connection to dynamic_radsec.apple.openroaming.net (idp.openroaming.net port 2083), subject CN=idp.openroaming.net,O=Cisco,ST=CA,C=US up
Jul 24 14:29:45 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 2E-8D-2E-E5-84-0D cui warren@kumari.net from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)
Jul 24 14:32:50 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 2E-8D-2E-E5-84-0D cui 30acafd3-4dd2-4c11-9345-8c4fb1e48133@openroaminggoogle from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)
Jul 24 14:33:13 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 30acafd3-4dd2-4c11-9345-8c4fb1e48133@openroaminggoogle from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)
^C
```

Jul 24 14:29:44 wkumari-1 radsecproxy[831222]: (831246) tlscconnect: TLS connection to dynamic\_radsec.apple.openroaming.net (idp.openroaming.net port 2083), subject CN=idp.openroaming.net,O=Cisco,ST=CA,C=US up

Jul 24 14:29:44 wkumari-1 radsecproxy[831222]: (831245) tlscconnect: TLS connection to dynamic\_radsec.apple.openroaming.net (idp.openroaming.net port 2083), subject CN=idp.openroaming.net,O=Cisco,ST=CA,C=US up

Jul 24 14:29:45 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 2E-8D-2E-E5-84-0D cui warren@kumari.net from dynamic\_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)

Jul 24 14:32:50 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 2E-8D-2E-E5-84-0D cui 30acafd3-4dd2-4c11-9345-8c4fb1e48133@openroaminggoogle from dynamic\_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)

Jul 24 14:33:13 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 30acafd3-4dd2-4c11-9345-8c4fb1e48133@openroaminggoogle from dynamic\_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)

# Logs

```
Jul 24 14:40:21 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 2E-8D-2E-E5-84-0D cui 86715e04-d510-41b7-9f96-70bf3bc48c07@openroamingapple from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)
Jul 24 14:40:52 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 86715e04-d510-41b7-9f96-70bf3bc48c07@openroamingapple from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)
```

```
Jul 24 14:40:21 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 2E-8D-2E-E5-84-0D cui 86715e04-d510-41b7-9f96-70bf3bc48c07@openroamingapple from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)
Jul 24 14:40:52 wkumari-1 radsecproxy[831222]: (831310) Access-Accept for user anonymous@apple.openroaming.net stationid 52-E1-F5-5D-C4-96 cui 86715e04-d510-41b7-9f96-70bf3bc48c07@openroamingapple from dynamic_radsec.apple.openroaming.net to 31.133.128.0/18 (31.133.152.23)
```