SIM Authentication Architectures and Interfaces

Karri Huhtanen (Radiator Software)

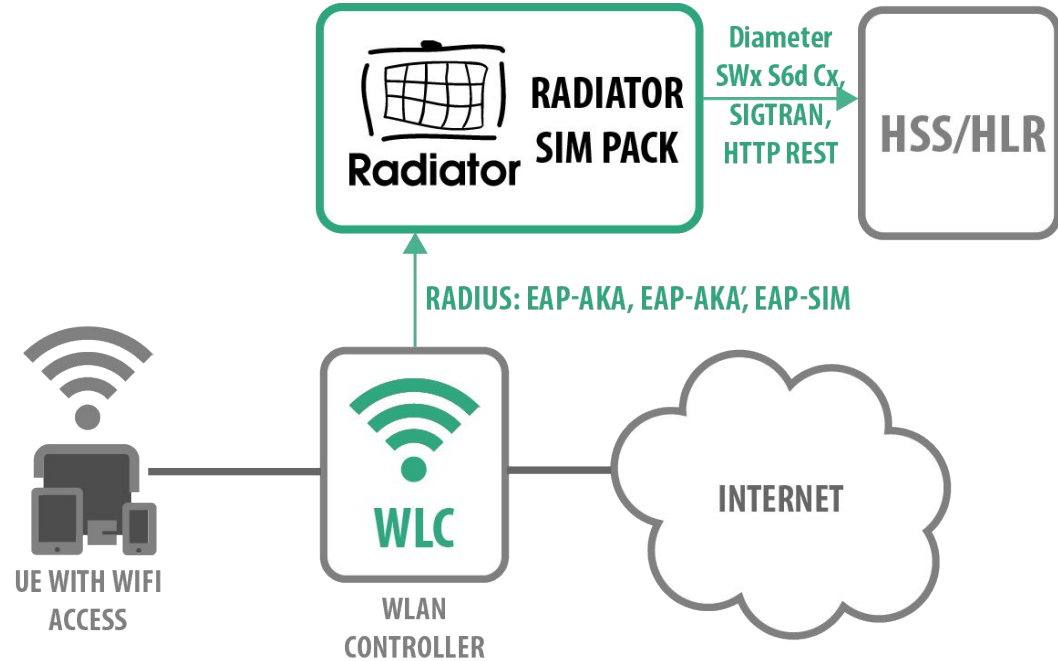Radiator

Radiator SIM Pack

- Radiator SIM Pack enables seamless roaming between mobile and Wi-Fi networks using SIM-based authentication
  - Full 3GPP AAA Server functionality for VoWiFi / VoLTE authentication and Wi-Fi offloading
  - Standalone support for EAP-SIM, EAP-AKA & EAP-AKA' authentication protocols, including fast re-authentication support for quicker handovers
  - IMSI Privacy Protection for all SIM authentication methods
  - Diameter SWx, Diameter S6a/S6d, Diameter Cx, SIGTRAN (SS7 over IP) interfaces support for integrator and inter-operator roaming
  - REST API for all SIM authentication methods
  - Subscriber profile information (e.g. MSISDN (phone number), roaming permission) retrieval via SIGTRAN, Diameter SWx and S6a/S6d

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Radiator SIM Pack use cases

- 3GPP AAA Server with both Diameter & SIGTRAN interfaces
  - VoWiFi / VoLTE authentication requires Diameter
- Private LTE/5G SIM authentication
- Wi-Fi roaming and offloading
- Entitlement server authentication
- Inflight connectivity, onboard connectivity
- (Roaming) SIM authentication for Wi-Fi as a service
- OpenRoaming with SIM authentication
- Enhanced SIM authentication with IMSI Privacy Protection
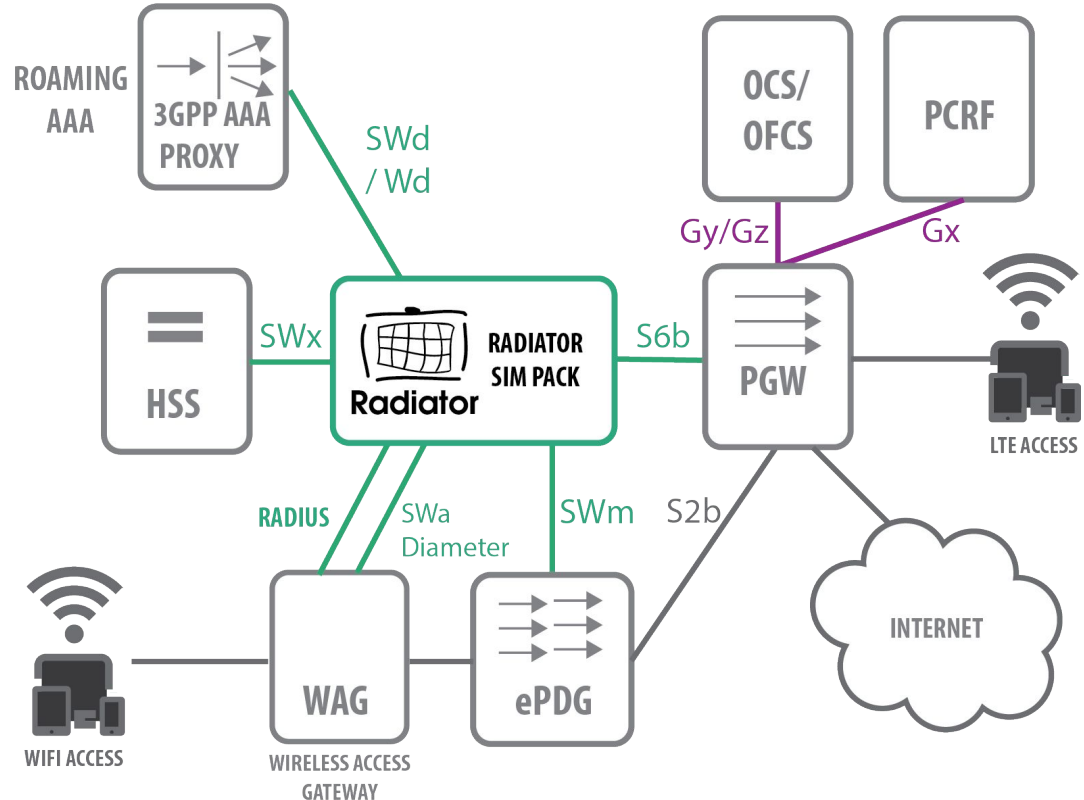
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Wi-Fi offloading architecture and interfaces

- Devices authenticate to the WPA Enterprise network using EAP-AKA, EAP-AKA' or EAP-SIM.
- Authentication is proxied via RADIUS to the IdP RADIUS server.
- IdP RADIUS server authenticates against HSS/HLR or some middleware with Diameter, SIGTRAN or possibly even HTTP REST calls.
- Quota control can be implemented based on RADIUS accounting or the setup can be enhanced with Diameter policy and charging interfaces and modules for online and offline charging.

RADIATOR SIM PACK

Diameter SWx S6d Cx, SIGTRAN, HTTP REST

HSS/HLR

RADIUS: EAP-AKA, EAP-AKA', EAP-SIM

UE WITH WIFI ACCESS

WLC

WLAN CONTROLLER

INTERNET

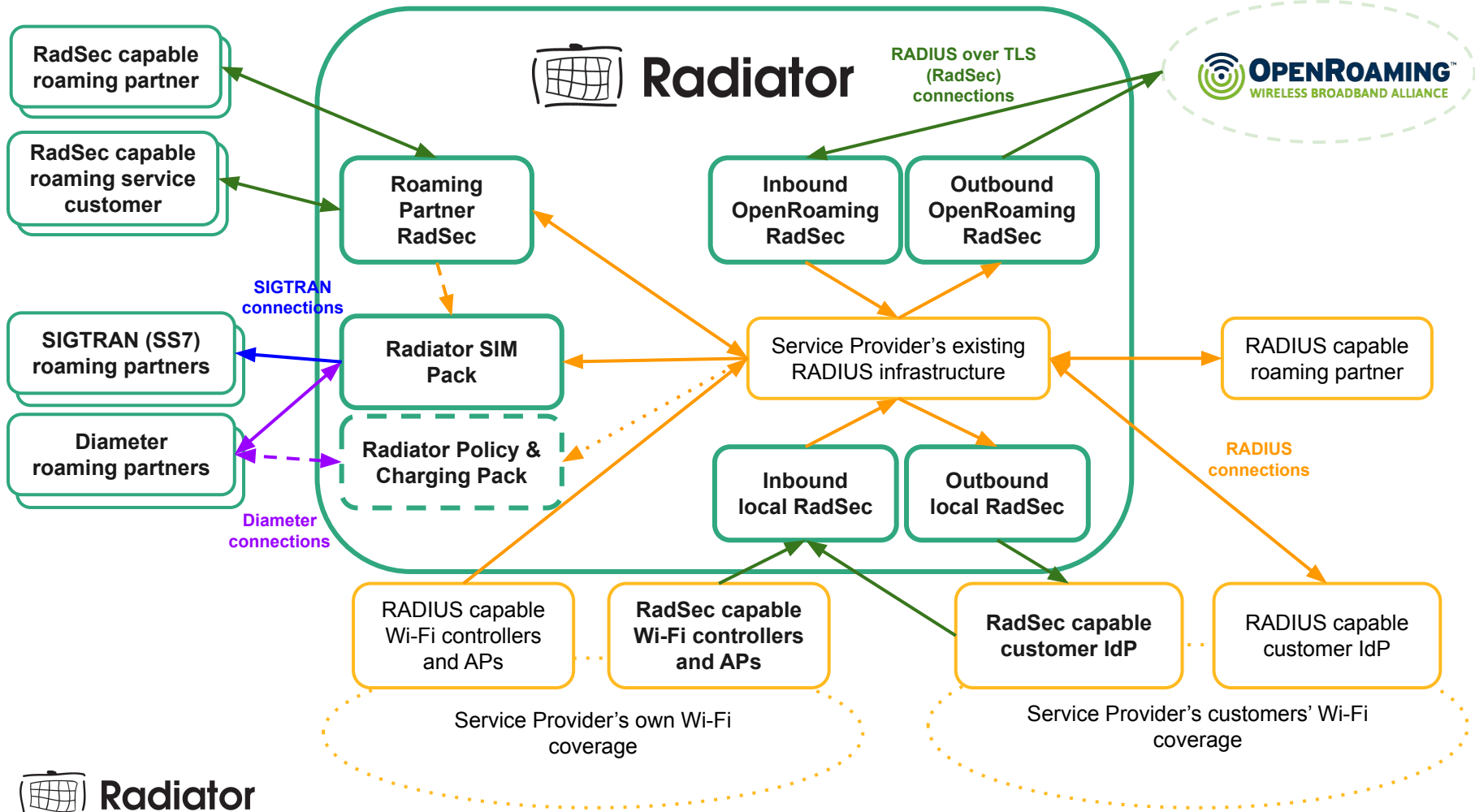Radiator

3GPP AAA Server architecture and interfaces

- 3GPP AAA Server functionality authenticates access from trusted and non-trusted (such as WiFi) networks to use services such as for example VoWiFi and Wi-Fi roaming.
- The 3GPP AAA Server uses the operator's HSS (Home Subscriber Server) via Diameter SWx.
- The authorisation function determines if the authenticated user has access rights for using services, which require 3GPP access, and enforces the subscriber profile.
- Between carriers and operators, Radiator 3GPP AAA Server also functions as a proxy server.

ROAMING AAA

3GPP AAA PROXY

OCS/ OFCS

PCRF

SWd / Wd

Gy/Gz

Gx

HSS

SWx

RADIATOR SIM PACK

Radiator

S6b

PGW

LTE ACCESS

RADIUS

SWa Diameter

SWm

S2b

WIFI ACCESS

WAG

WIRELESS ACCESS GATEWAY

ePDG

INTERNET

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Inflight connectivity architecture and interfaces

- Wi-Fi authentication and accounting in sent via RADIUS to RADIUS server.
- Authentication is usually done utilising operator's own HSS/HLR or via Diameter, SIGTRAN, RADIUS, RadSec utilising operator's roaming agreements.
- Accounting information as well as information from authentication can be copied to policy enforcement/traffic control nodes.
- Operator can also provide SIM authentication as a service to its own roaming service customers.

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RADIUS over TLS (RadSec) connections

OpenRoaming™ WIRELESS BROADBAND ALLIANCE
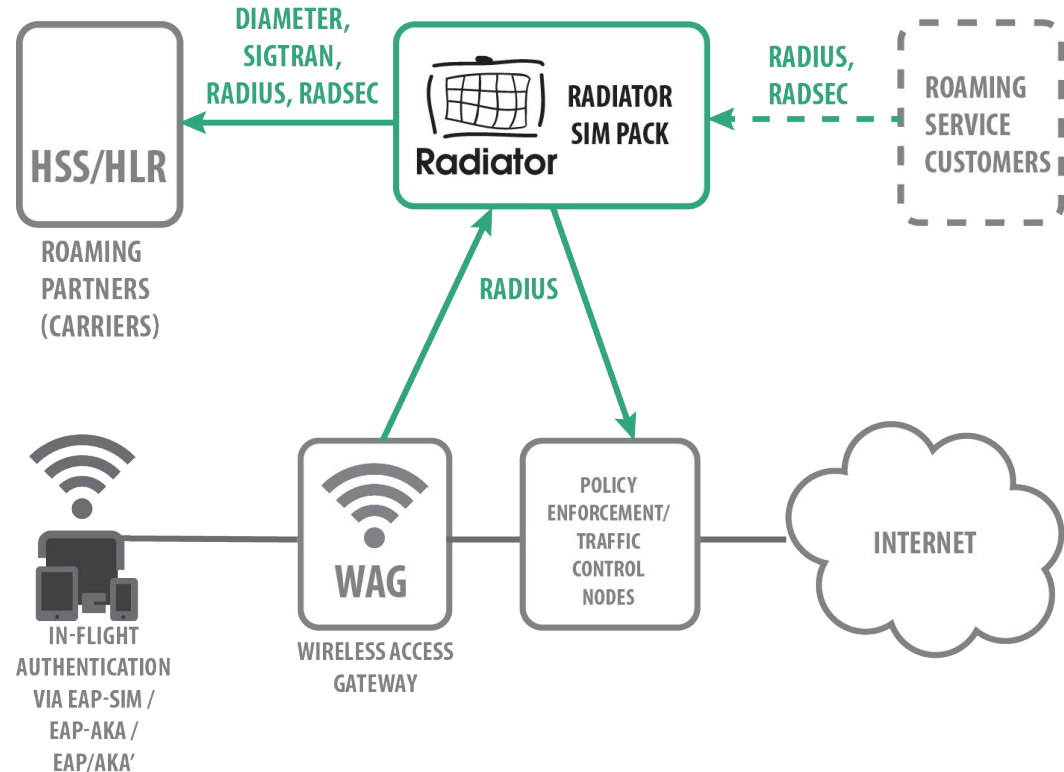
RadSec capable roaming partner

RadSec capable roaming service customer

Roaming Partner RadSec

Inbound OpenRoaming RadSec

Outbound OpenRoaming RadSec

SIGTRAN connections

SIGTRAN (SS7) roaming partners

Radiator SIM Pack

Service Provider's existing RADIUS infrastructure

RADIUS capable roaming partner

Diameter roaming partners

Radiator Policy & Charging Pack

Diameter connections

Inbound local RadSec

Outbound local RadSec

RADIUS connections

RADIUS capable Wi-Fi controllers and APs

RadSec capable Wi-Fi controllers and APs

RadSec capable customer IdP

RADIUS capable customer IdP

Service Provider's own Wi-Fi coverage

Service Provider's customers' Wi-Fi coverage

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For more information

Website: https://radiatorsoftware.com/

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