



# Home broadband connectivity: Emerging Trends

#WIFI-KS 2021



# ISP goals

---

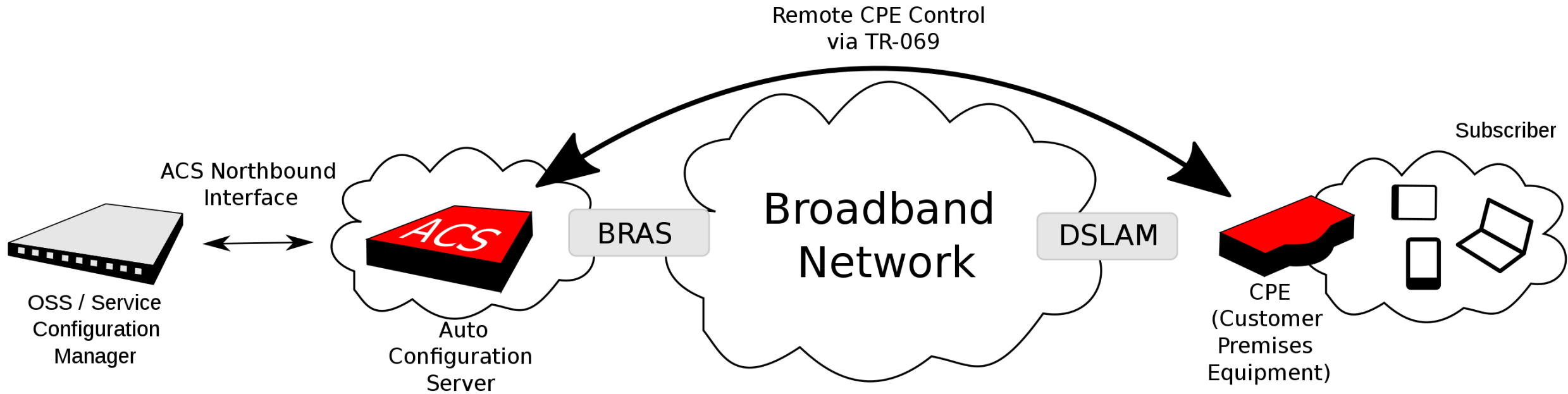
- **Year 2001:**
  - Lifecycle management
  - Monitoring
  - Provisioning
- **Year 2021:**
  - All things 2001 plus
  - WiFi/Mesh management
  - IoT
  - OTT third-party services
  - QoE

# ISP goals: Options and Challenges

---

- Several Technologies – Cable, Fiber, MoCA, DSL, WiFi, PLC...
- No one standard: BBF, WFA, IEEE...
- Open source industry driven options: RDK-B, Prpl Foundation
- Proprietary options: NMESH and many others

# Evolution: TR-069 in 2004



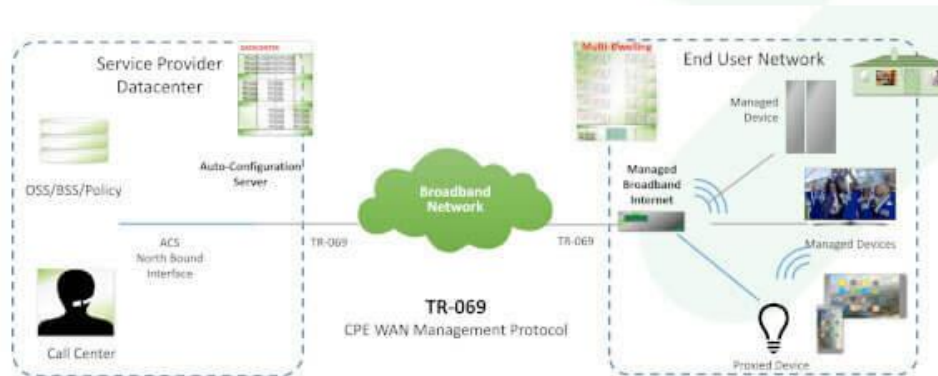
Source: Wikipedia

# Evolution: TR-181 in 2011

- TR-069 was solving a problem pre-WiFi
- Wide adoption of WiFi brought a new layer of provisioning and manageability problem
- Required Data model device2, i.e, TR-181
  - Simply an evolution of TR-069 targeted for enabling wifi platforms as well

## TR-069 Architecture

CWMP was designed for firmware management, provisioning, and troubleshooting of CPE.



# Evolution: TR-369 in 2018

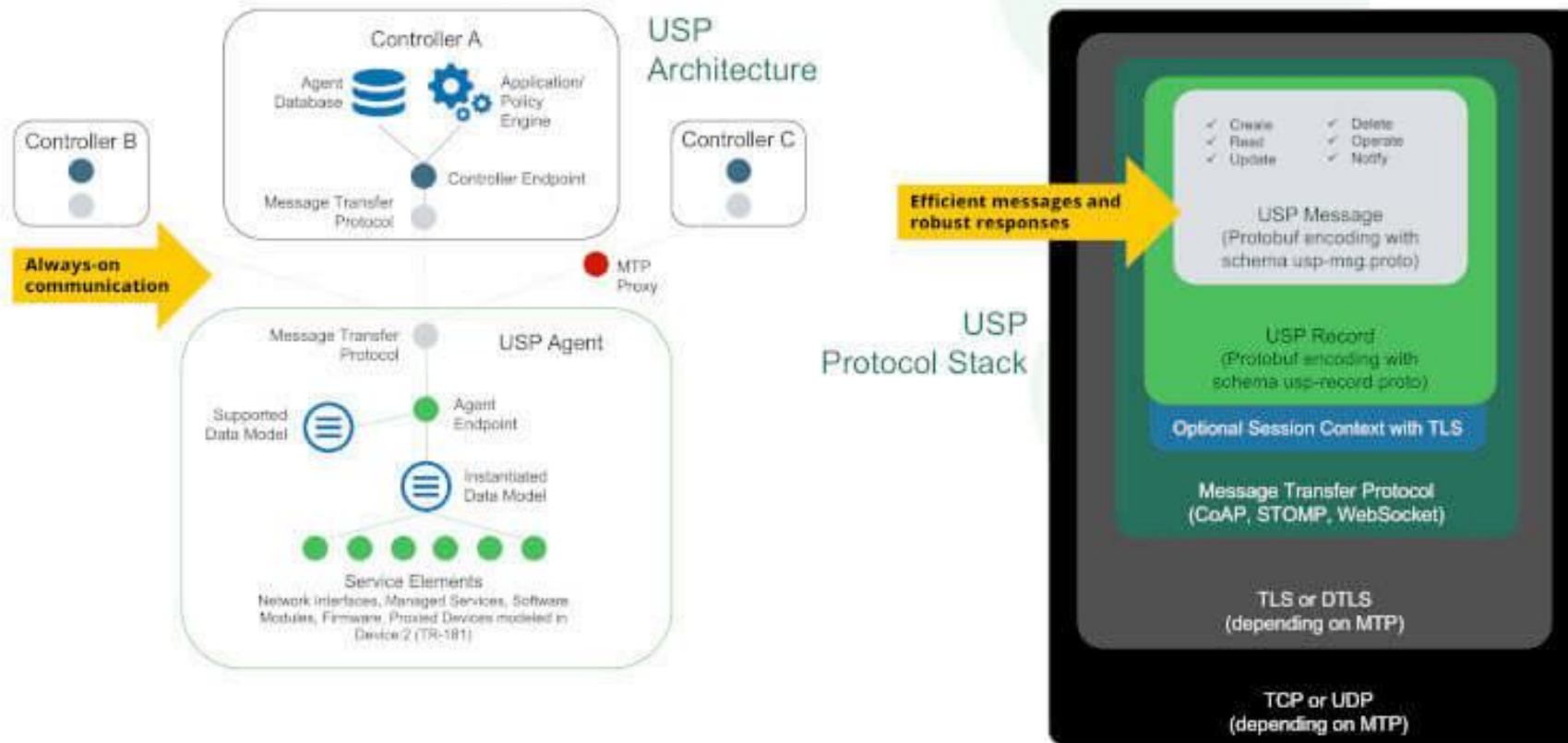
---

## What is TR-369

- Next gen TR-069?
- WiFi/Mesh management – managed services and outsourcing wifi management
- Lifecycle management of Smart and IOT devices
- Interoperability between providers
- Managing Quality of Experience with visibility to client devices
- Proxy for IoT devices

# TR-369: How?

## Details: managed endpoint explosion



# Managing Gateways and APs @ home – service provider expectations

Cloud based management and control of the network is extremely crucial

CGW Box

ROOT

E1

E2

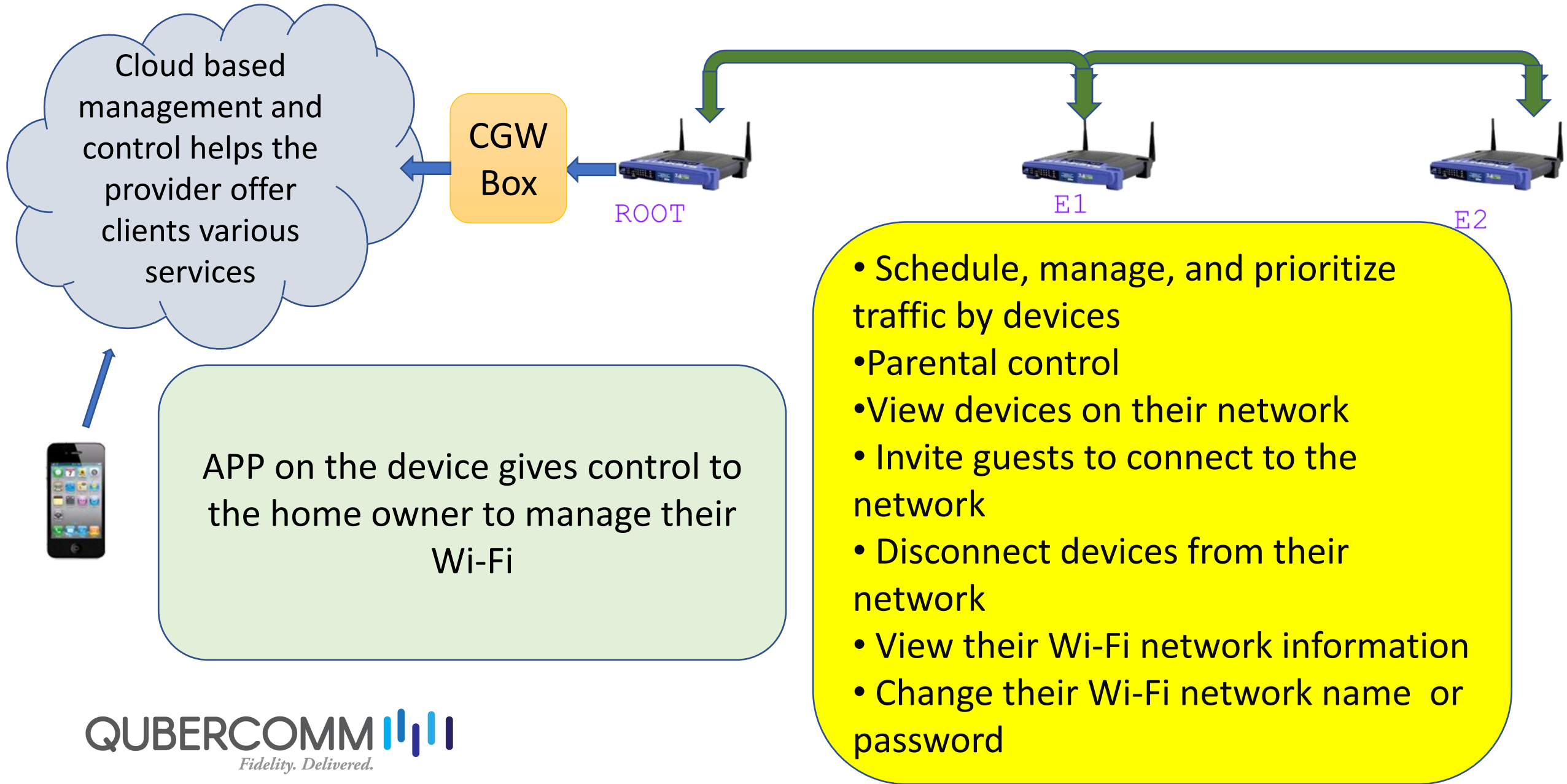
Have flexibility to work with different APs within and across homes

Ability to change algorithms for meshing, radio resource management and others

Capability to analyze data about user's WiFi experience and proactively provide solutions



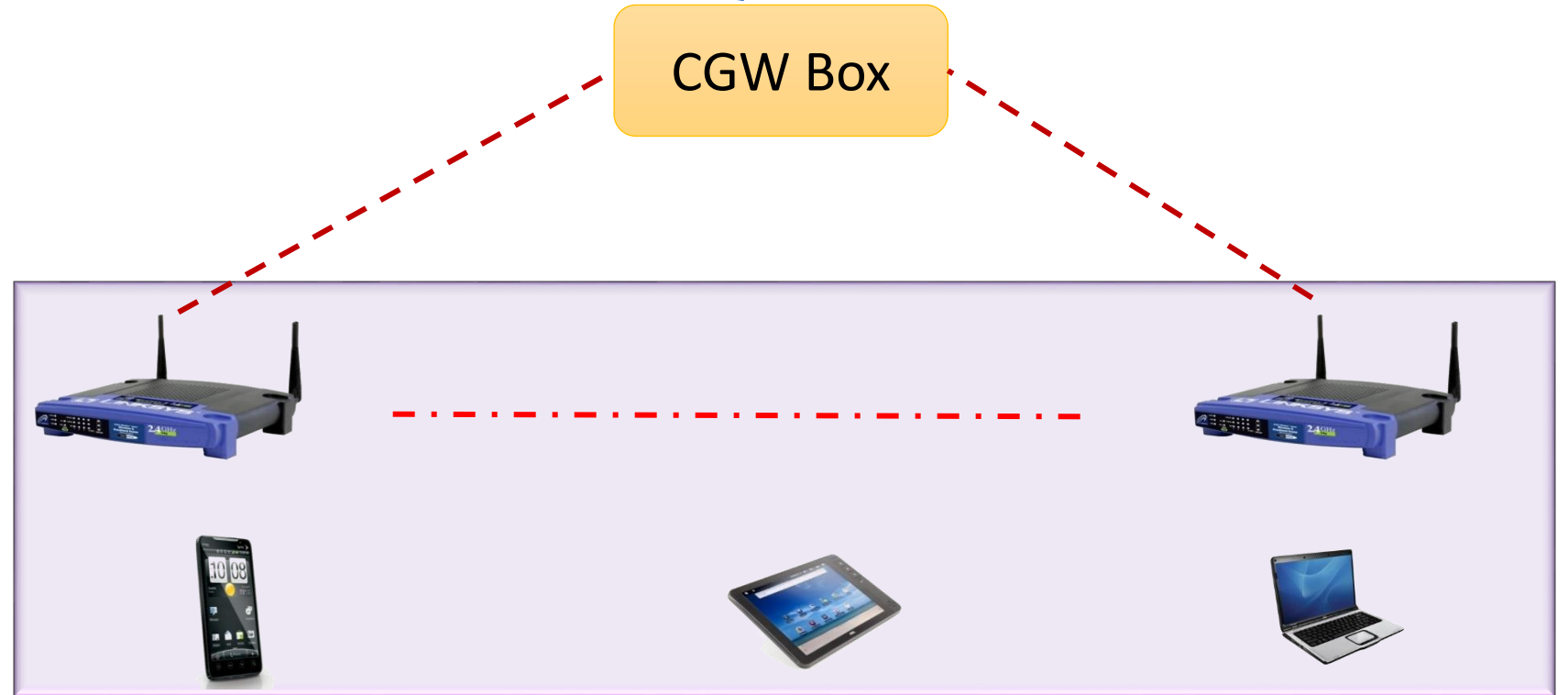
# Managing multiple APs @ home – end user expectations



# Multi-AP Protocol

Can a CGW solution manage with different protocols ?

The Multi-AP protocol defines the backhaul communication amongst APs; EasyMesh, WDS, 802.11s are the popular ones



Can the algorithms discover the mesh protocol to tune solutions ?

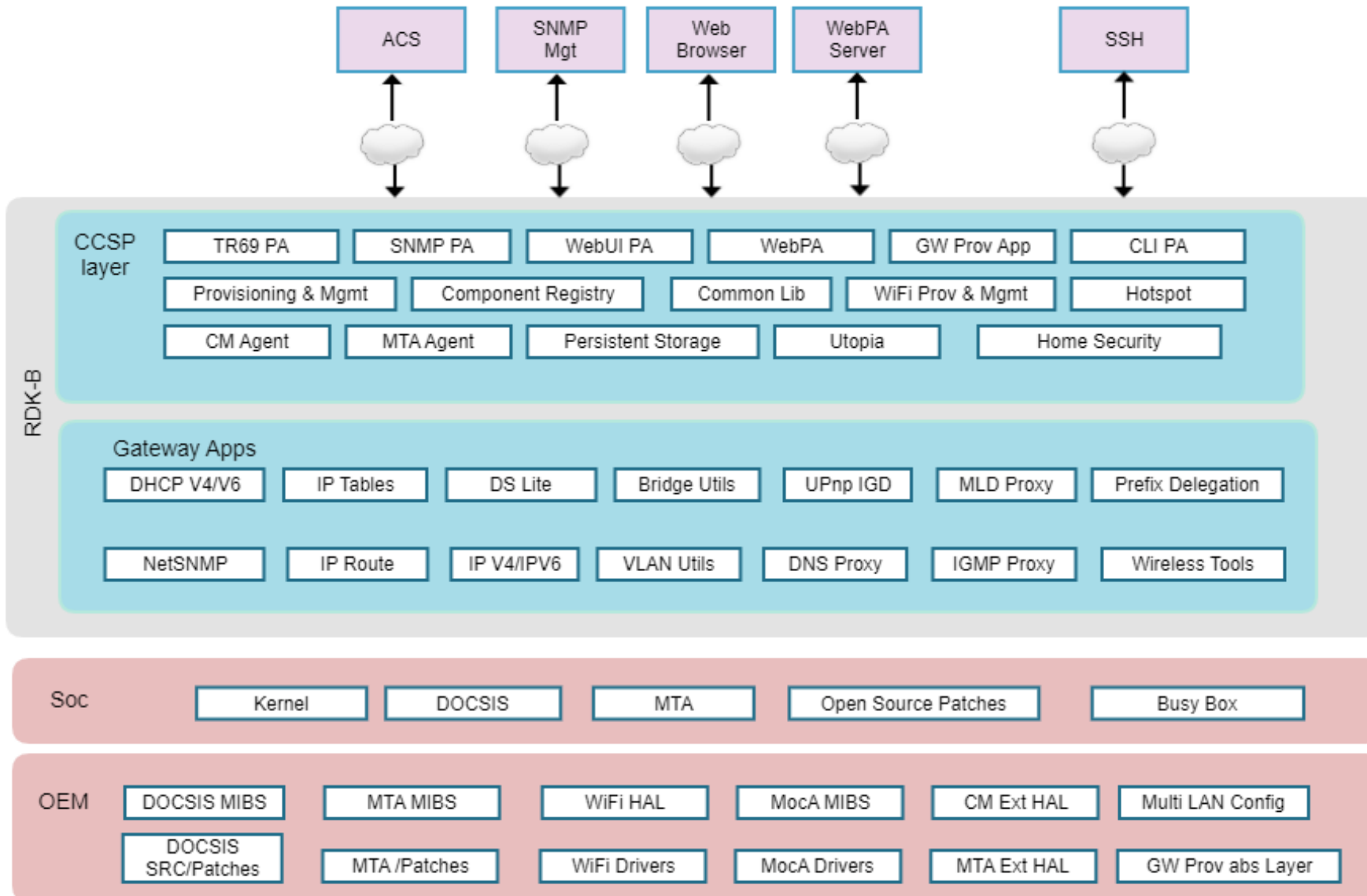
## What Should a Customer be Aware of ?

Is the proposed solution truly portable across different Wi-Fi Solutions ? How easy will it be to manage legacy plus new deployments?

Intelligent algorithm might not seamlessly work across wifi and might need specific customization

Different mesh protocols might also be a challenge; opensource solutions might not be easily optimised

# RDK-B: An Open source initiative



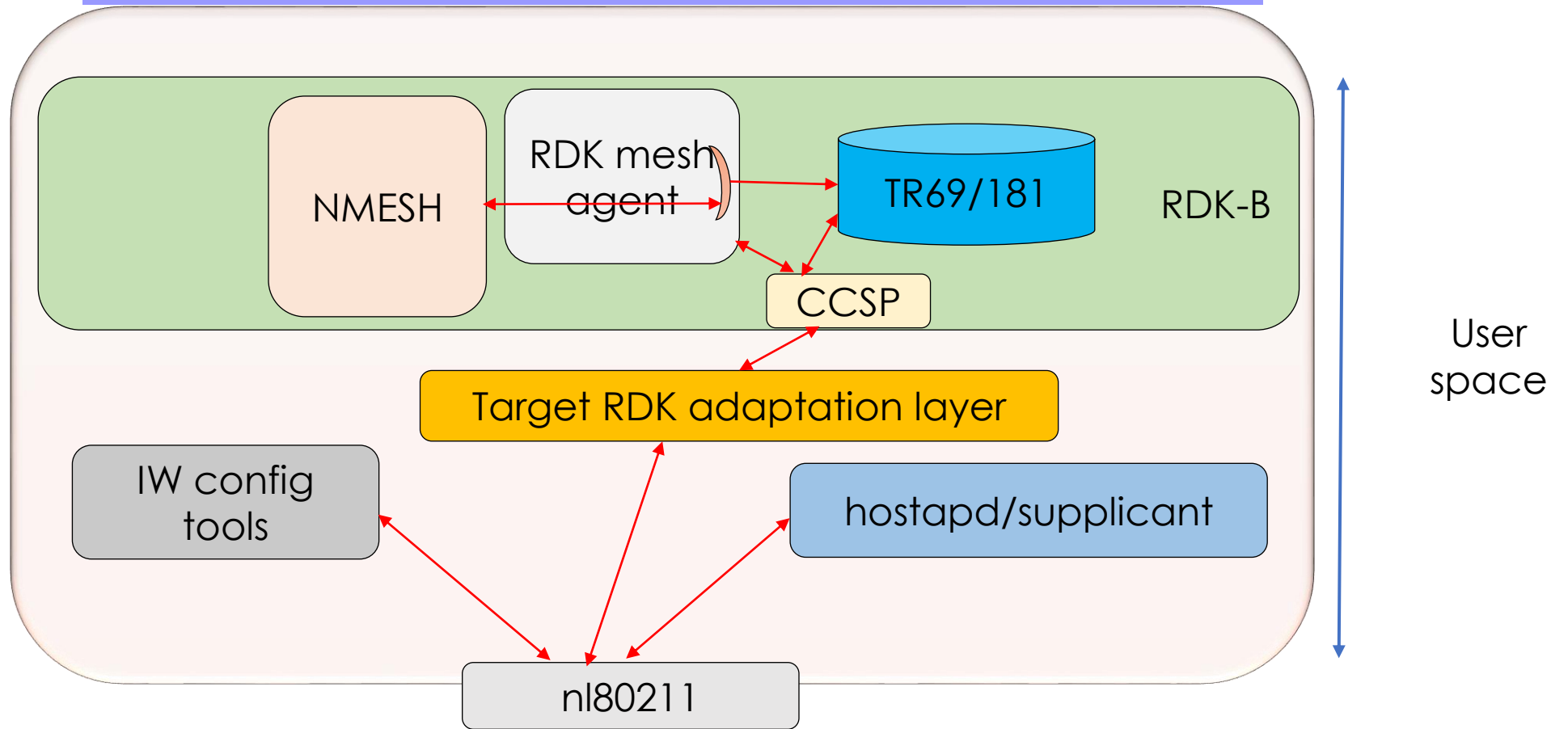
# MESH Features

---

A hybrid cloud-edge architecture to offer:

- Cloud-based Wireless Network Management
- Mesh infrastructure and management
- Customer/Venue/Group level differentiation
- User privilege management
- Captive portal
- OTA upgrade
- Multi-SSID support
- IoT discovery and enablement
- Telemetry and enablement for Machine Learning
- Application Aware Performance
- Security
- All the device specific features are chipset agnostic
- Agnostic to Mesh Protocol
- Integration with other middleware and data models

# What can Nmesh do? – Sample Deployment



Interface with RDK-B for talking to carrier cloud so that Wi-Fi stats and config info can go back and forth

Can interact with Intelligent algorithms for meshing, band steering etc - Adaptive Network Intelligence (ANI)

Mesh protocol agnostic – can work with EasyMesh, WDS, 802.11s ,..



### USA OFFICE

7308 Stonedale Dr Pleasanton CA 94588

 +1 650 209 4747



### INDIA CENTRE

#38, Developed plot industrial Estate  
Perungudi, Chennai-600096

 +91 98408 33080



### CONTACT US

[contact@qubercomm.com](mailto:contact@qubercomm.com)

# THANK YOU!