



Open Source
Foundation

Demos Overview



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Wi-Fi Management Leveraging prplMesh & prplOS

Airties Edge Wi-Fi software running on prplMESH/prplOS EasyMesh agent (on a Turris Omnia gateway), onboarding an external EasyMesh™ extender.



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Airties Edge on prplMESH/prplOS



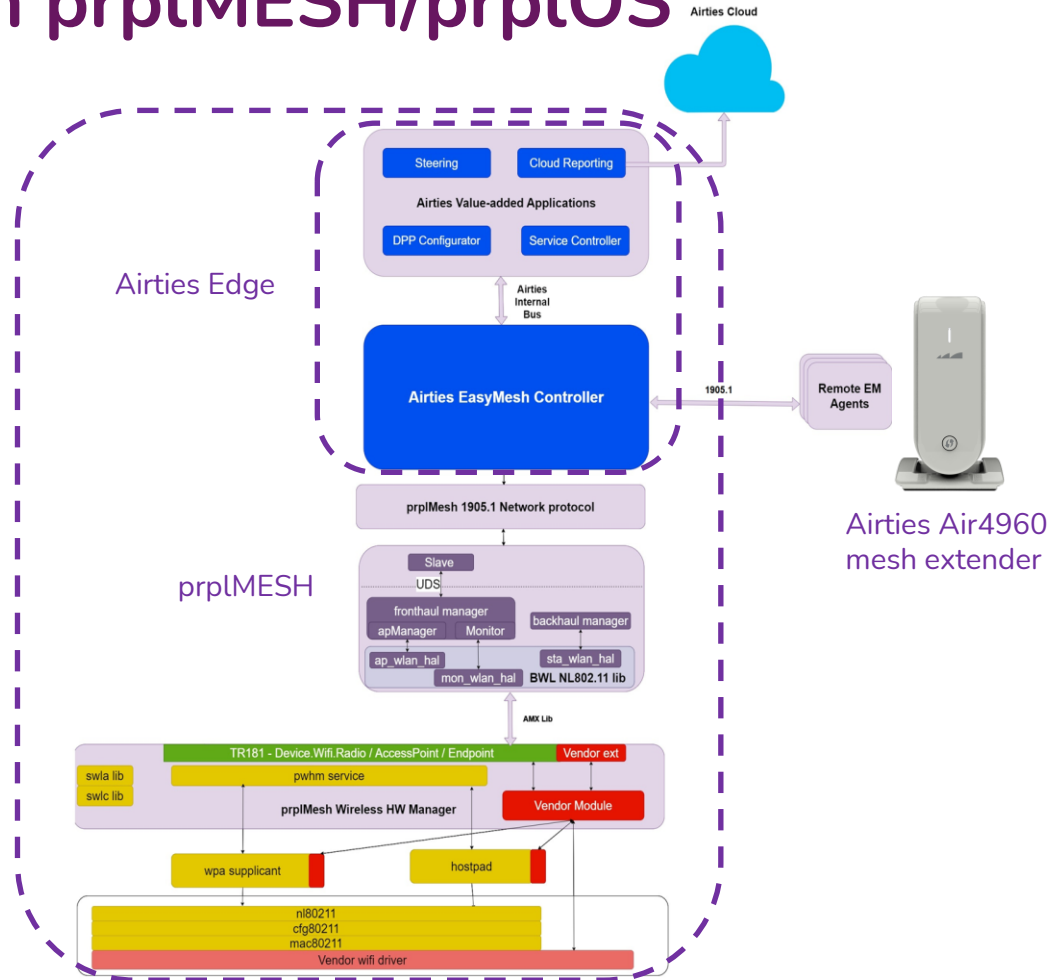
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Airties Edge running on prplMESH EasyMesh™ agent (Turriss Omnia GW), onboarding an external EasyMesh™ agent (Airties Air4960 extender)



Turriss Omnia GW
prplOS



Airties Air4960
mesh extender

Broadband & Wi-Fi Diagnostics Leveraging prplOS & prplLCM

App porting above the prpl High-Level API demonstrating platform-independence


Beegol



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Beegol has the world's best remote diagnostic suite for broadband and Wi-Fi

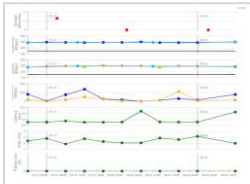


We are new to prpl, but we fully adopted the prpl Architecture:

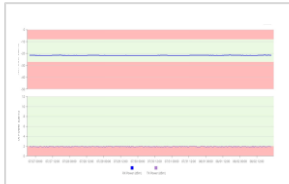
- Ported our App above the prpl High-Level API ☑ now platform-independent and portable to other platforms.
- Containerized our App ☑ now easily deployable from the cloud in field trials.
- Adopted prpl LCM life-cycle management ☑ enables remote management of deployed Apps.
- Now running on the MaxLinear prpl development platform ☑ every prplWare update tested on that CI platform.
- Any prpl Operator ☑ can now easily bench-test or field-trial the Containerized Beegol App
- All of this is demonstrated in the lobby ☑ please visit us there



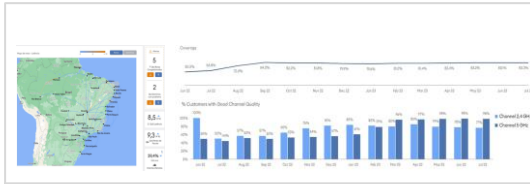
Data and Diagnostic on the cloud



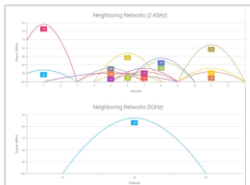
Speedtest



ONT TX/RX Data



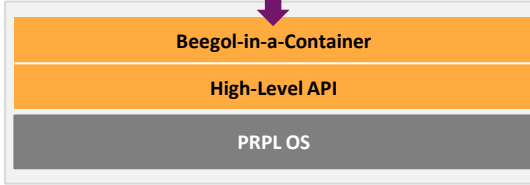
Transport Data



Wifi



Geolocation of Access Problems



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Bitdefender IoT Security Agent on prplOS

Showcase the seamless deployment, execution, and capabilities of the Bitdefender IoT Security Agent - a solution designed to protect connected devices - on a router running prplOS.



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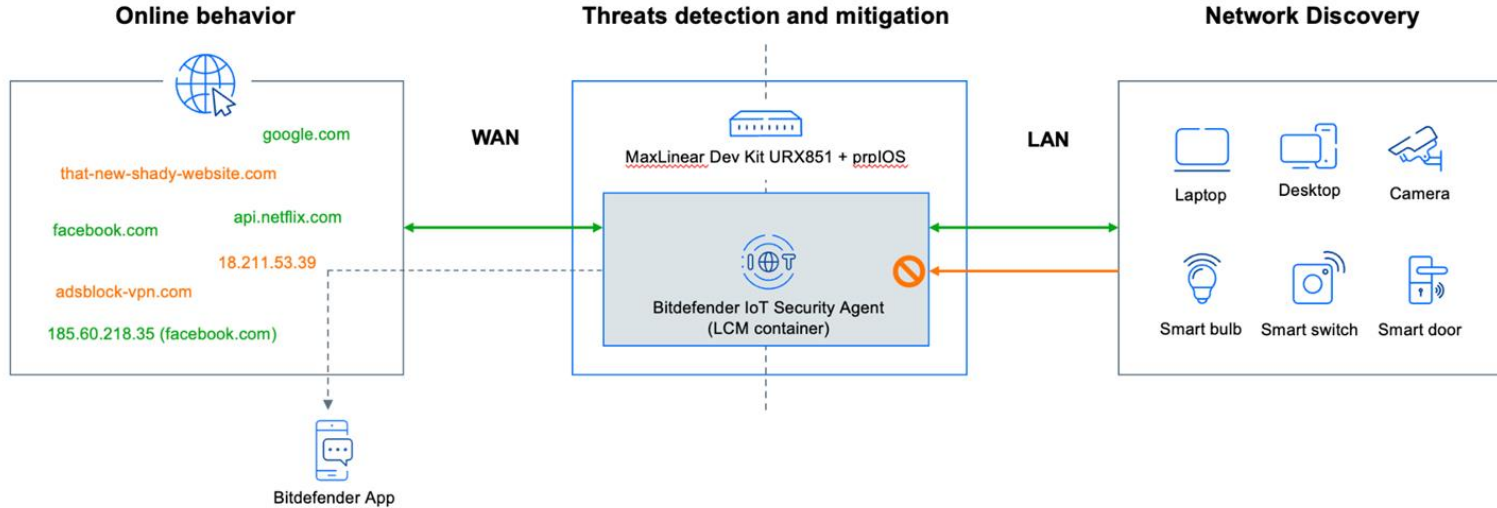




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Running Bitdefender IoT Security Agent on prpIOS



Bitdefender is a recognized cybersecurity leader with dual headquarters in Europe and the U.S., acknowledged for its over 20-year pioneering work and continuous pursuit of excellence. As a market and industry leader, we protect individuals, businesses, and society by offering best-in-class cybersecurity solutions trusted by millions of consumer.



Mobile Wi-Fi / Virtual BSS: A New Way To Enact Client Steering

“Mobile Wi-Fi is a new way to do client steering on multi-AP networks which results in a fantastic user experience.”

CableLabs[®]



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Mobile Wi-Fi / Virtual BSS: A New Way To Do Client Steering

Steve Arendt | Principal Architect & Director, ATG, CableLabs

Problem: Steering between Wi-Fi APs doesn't work well (sticky client, sub-optimal band, edge-of-coverage)

Solution: Instead of moving client to new BSS when steering, move the BSS itself to new AP. This is Mobile Wi-Fi!

Result:

	Legacy Steering	Mobile Wi-Fi
Steer Success Rate	10% - 80%	100%
Steer Duration	100 - 200 msec	~10 msec

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Enabling Matter with prplOS

Demonstrate expanded Home Automation on prplOS using **HL-API's/USP** based on **MATTER**.



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Home Automation - MATTER enablement on prpl 3.x

Objective

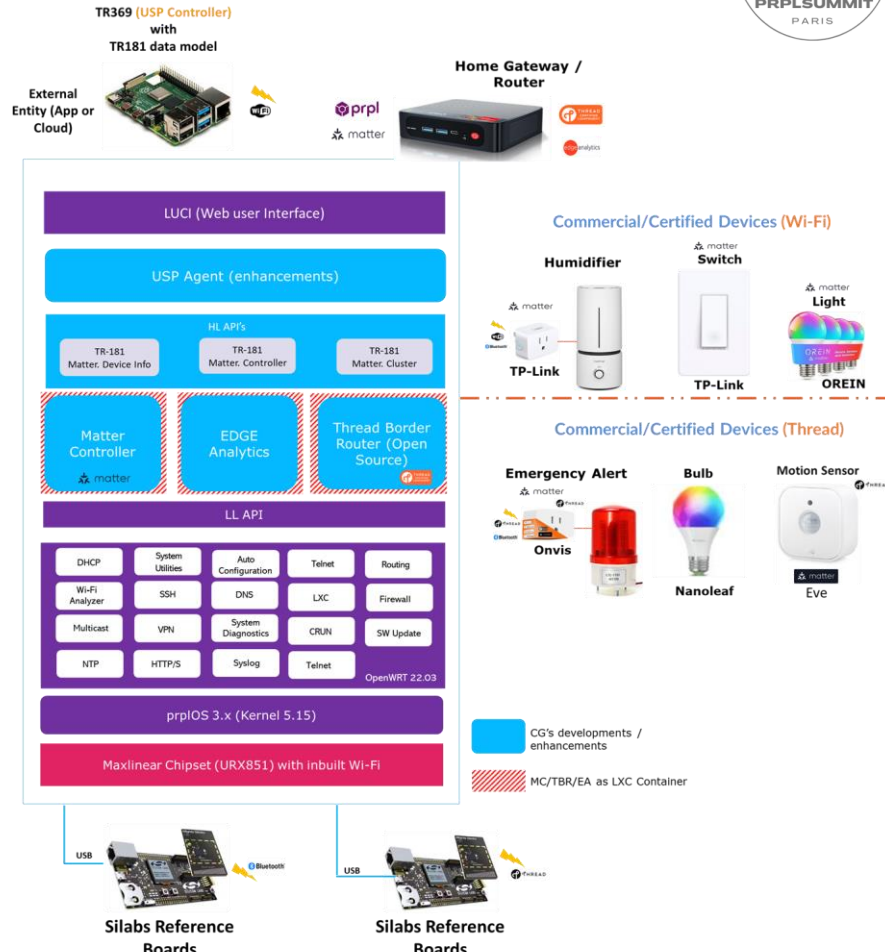
- To demonstrate **the Home Automation application on prplIOS** using **HL-API's** based on emerging standard - **MATTER**.
- Through **MATTER** technology, the broadband service providers can provide more **smart services / co-services** for existing and new customers along with the internet connectivity and can become an **enhanced hub** for **safeness** and other wide range of application possibilities addressing the **interoperability** challenges
- Smart services along with Matter enablement on Wi-Fi Routers can make the “connected devices” ecosystem more compact and can help the consumers to enable home automation, home safety/security, convenience and avoid damage prevention of their home such as fire, water leakage, theft prevention etc.,

Demo components / Setup / scenarios

- Core components integrated on prpl 3.x**
 - MATTER** as a *Middleware framework (enhancements in Open source) and deployed as a LXC container on PrplIOS*
 - OTBR** (Thread Border Router) as a *Docker Container (Open source)*
 - MQTT Broker** (Open source) integrated on *OPENWRT 22.03 snapshot version*
 - USP Agent** (*OBUSPA Open source with CG's enhancements*)
 - HL-API's** for interfacing with USP agent and Matter software (*CG's new development*)
 - TR-181 Data model** (*CG's design on existing BBF model*)
 - EDGE Analytics** (*CG's enabler*)
 - All the package runs on latest **Linux kernel 5.15**
- Demo setup based on **AMD / Pi4** ported with **prpl 3.x** latest open-source package and integration with **Matter controller + USP AGENT and Open Thread Border Router (OTBR)** as **container** with add-on libraries / components
 - USP Controller** integrated on reference platform (Pi4 / Ubuntu) as a Mobile App to demonstrate the functionality to control both Wi-Fi and Thread devices (lights)
- Demo Scenarios having **MATTER** on **PrplIOS** over **Wi-Fi and Thread** that covers
 - On-boarding & Control of Wi-Fi and Thread devices (TP-link, OREIN, Nanoleaf)
 - Input and Output device linking (Motion sensor - Eve with Power socket - Onvis)

Business advantages

- **MATTER** as a Container on Wi-Fi Router (no external hub required)
- Increasing revenues with addition of new services to end customers
- Enhance data/device security
- Improve customer experiences
- Increase customer satisfaction
- Support to advanced / new smart services deployment
- Easy system integration / migration in the home ecosystem



Wi-Fi Sensing Leveraging prplOS & prpl LCM

Cognitive Systems has successfully completed the work to containerize our WiFi Motion application, allowing it to run in a fully isolated environment using the prpl Foundation LCM flow with SoftAtHome Middleware and the MaxLinear Chipset

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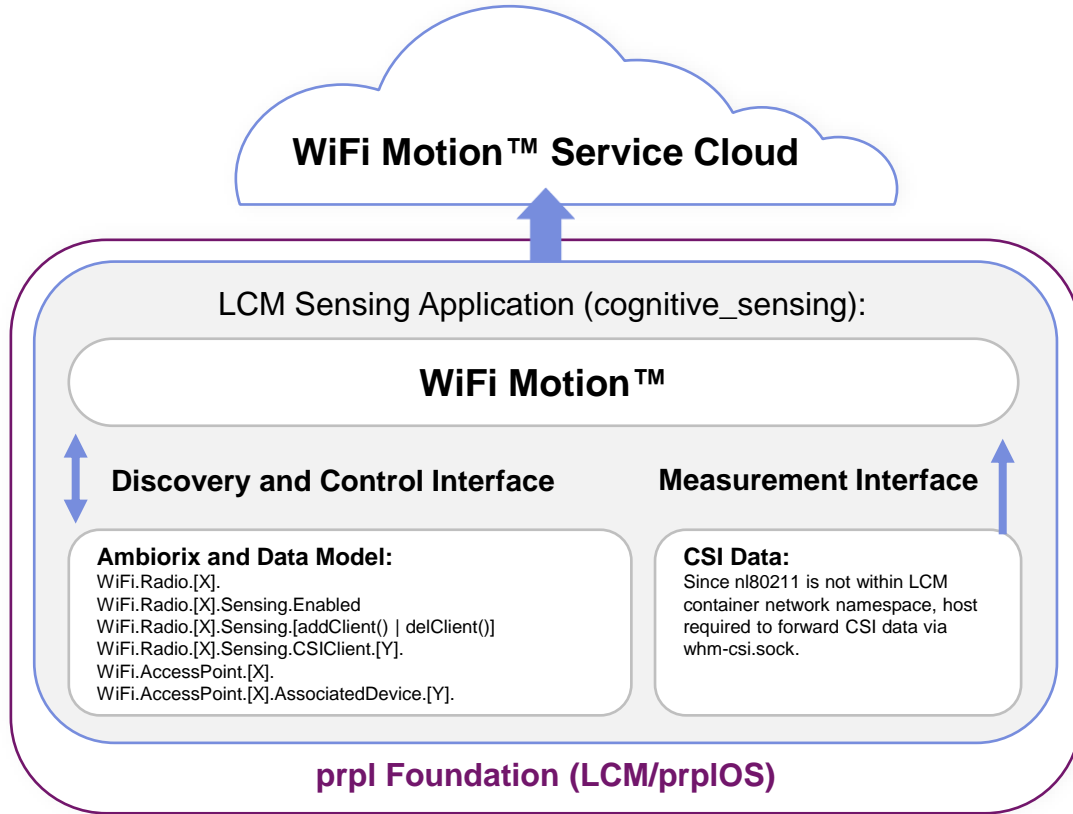
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WiFi Motion Sensing Components



Info:

Cognitive Systems employs a fully automated development build-flow, ensuring that every committed code change triggers the deployment of a new container to our registry.



Notes:

Demo limited to Single-AP



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Managed Containerized Applications with USP & prplOS/prplLCM



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See how containerized applications can now communicate with each other and dynamically expand the device's data model via standardized USP communications utilizing OB-USP-Agent and the USP Services Architecture.

COMMSCOPE®

USP Remotely-Managed Containerized Apps with prplLCM

Demonstrating...

- A Service Delivery Platform that serves to orchestrate the deployment of containerized applications across a service provider's entire fleet of devices.
- Enabling the remote management of prplLCM based devices with intelligent containerized applications that can both extend the device's overall data model and communicate with other containerized applications.

Presenting.....

- CommScope's Managed Software Services which enables Service Providers to create and manage their own prpl device software stack and containerized applications.

Enabled by BBF USP and the Device:2 root data model.



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Residential Network Threat Detection

Demo of Cyber adAPT Residential Network
Threat Detection leveraging the prpl High-Level
API

Cyber  adAPT



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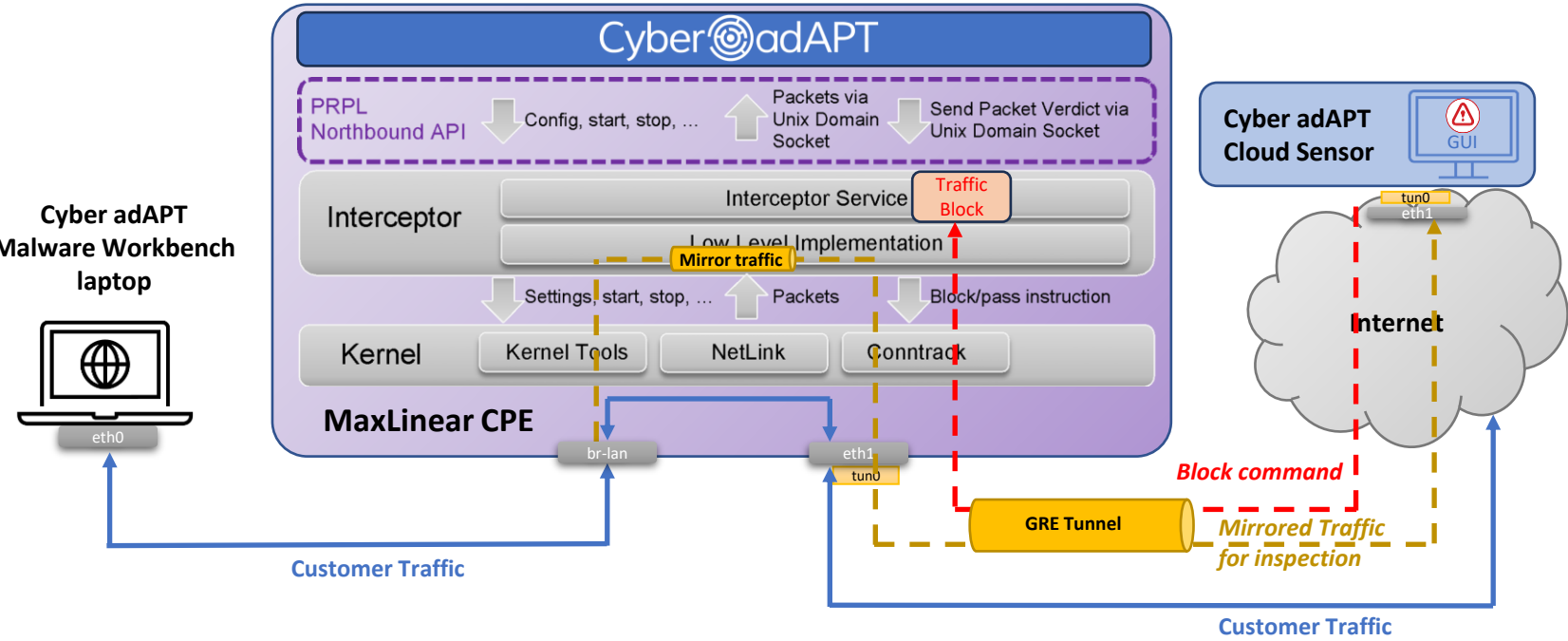
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Cyber adAPT Demo of Residential Network Threat Detection



1. Cyber adAPT Malware Workbench generates live malicious traffic which is sent to the prpl-based MxL CPE.
2. The CPE, leveraging the prpl OS packet interceptor high-level API, mirrors specified traffic from the LAN interface and tunnels it to a the Cyber adAPT cloud sensor.
3. If malicious behavior is detected, the sensor can send block instructions back to the CPE (not part of current demo).
4. Visualization of identified malicious activity shown on GUI.

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Network x-ray agent leveraging prplWare

See the integration of the domos network x-ray agent onto PrplWare

DOMOS








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network x-ray on top of prplWare

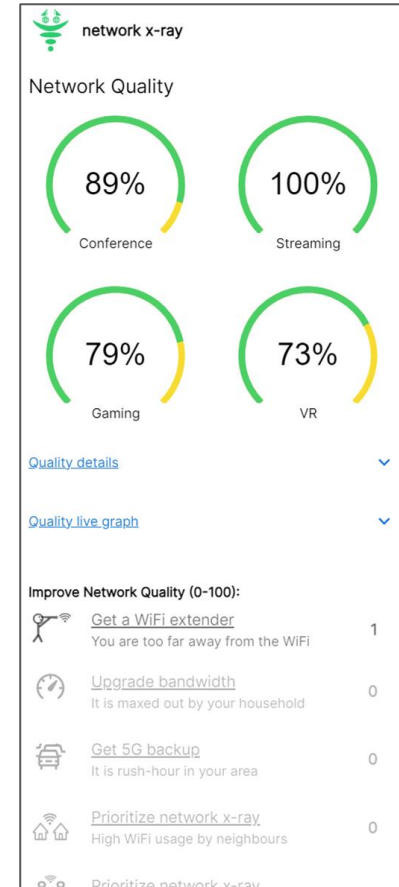


Demos in a nutshell: For a device, household or population...

- Which application types are used 
 - gaming, video conferencing, video    . ?
- What is their end-to-end quality
 - How well are these applications performing?
- Where is any quality degradation coming from 
 - Is it coming from the access network? The in-home wifi? Is it due to too low bandwidth?

The demo features:

- Container running on the Maxlinear LGP board
- Integration into the prpl HL API
- Container management and orchestration with Commscope using prpl LCM
- network x-ray for Microsoft Teams - unlock the full potential of work connectivity and troubleshooting and self-help options to resolve connectivity issues to end-users and IT-Admins.



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Enabling 5G NR Applications with prplOS

5G NR running on prplOS-powered Open Service Platform utilizing USP and TR-181 data model.



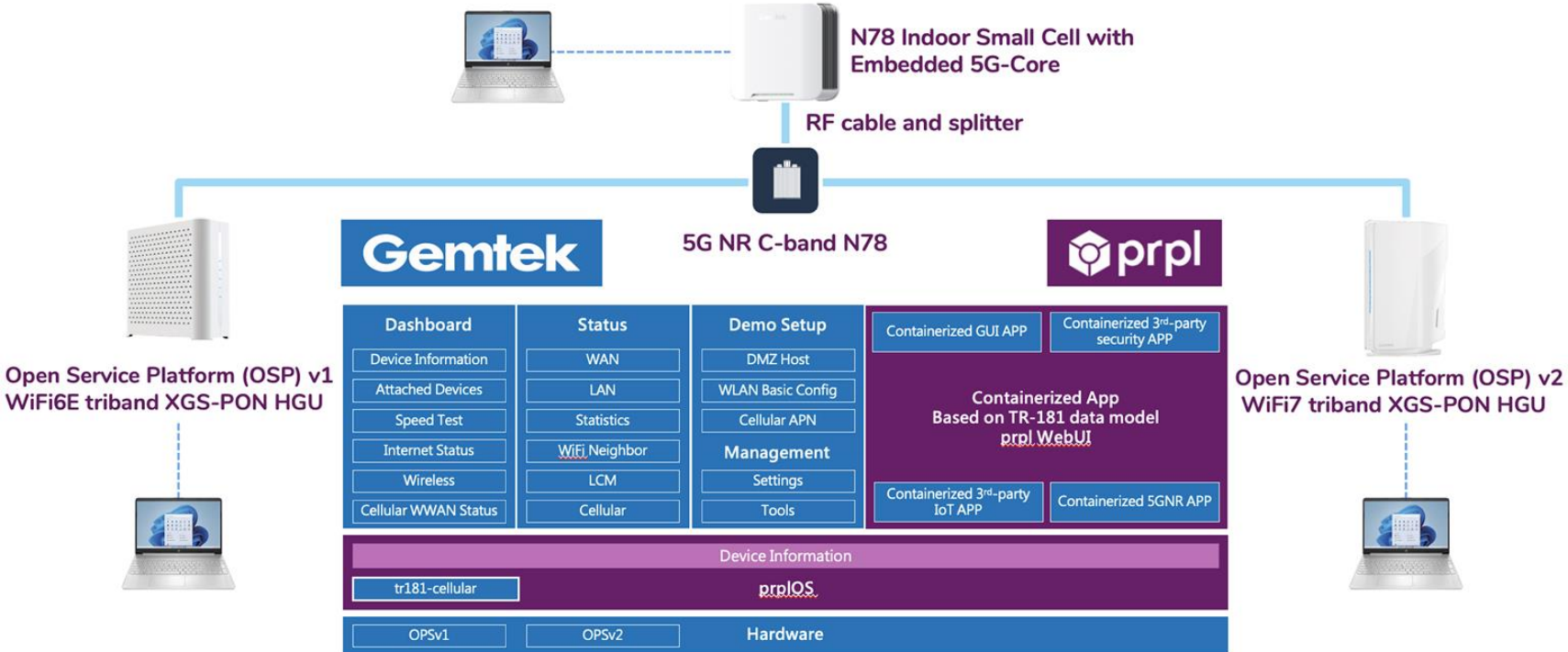
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Gemtek prplOS 5G NR Live Demonstration OSPv1 and OSPv2



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Enabling Wi-Fi Motion Detection with prplMesh & prplOS

Present software solution to detect human movement utilizing WiFi sensing technology and built on top of prpl ecosystem.

GlobalLogic[®]
A Hitachi Group Company

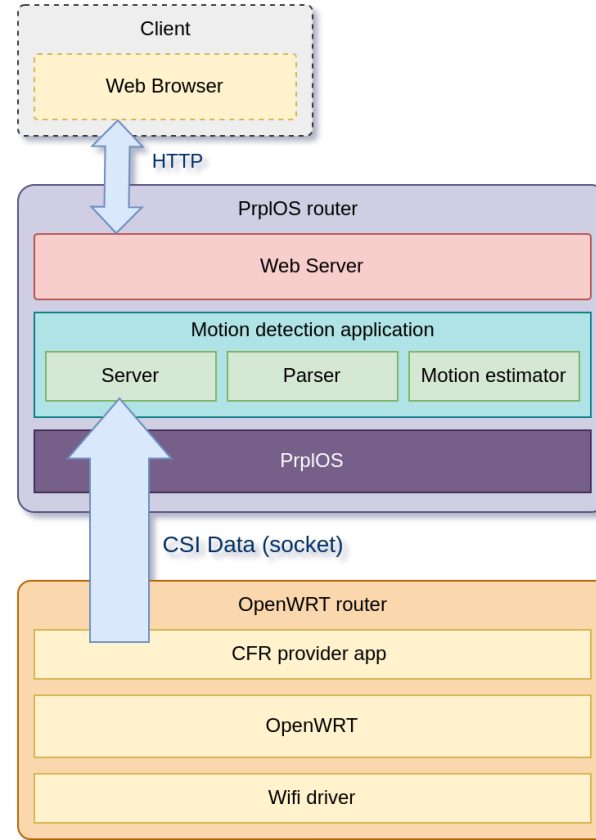


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WiFi Motion Detection

- Lightweight solution to detect **human movement** integrated into a retail WiFi gateway
- **Radio waves** emitted by WiFi routers and the signals bouncing off the objects are used to gather information about movement
- Motion estimation is based on analysis of **CSI data** retrieved from WiFi module
- Solution based on **GL.iNet GL-B1300** platform
- Built on top of **prpl** ecosystem



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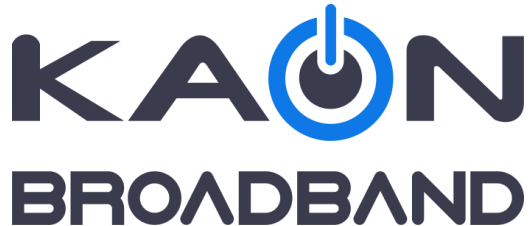


prplOS Multi SoC Support

Service Apps in the Gateway! The enablement of multi-SoC solutions with prplOS



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Enablement of prplOS – Multi SOC Solution (prplLCM)

Kaon is excited to show case this year two platforms running the same version of prplOS and enabling prplLCM including the deployment of micro services!
Come and see our demos!

```
prplOS
-----
based on OpenWrt

PrplOS kn-g1 dev-next-g1 20230921 OD3.3-t7-C, r20508-c8c7554f08

=== WARNING! ===
There is no root password defined on this device!
Use the "passwd" command to set up a new password
in order to prevent unauthorized SSH logins.

root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#

16°C
Zápor
```

```
root@prplOS:~#
root@prplOS:~#
root@prplOS:~#
```

Fig.1 – prplOS Next Branch (Cortina, Qualcomm and Mediatek)

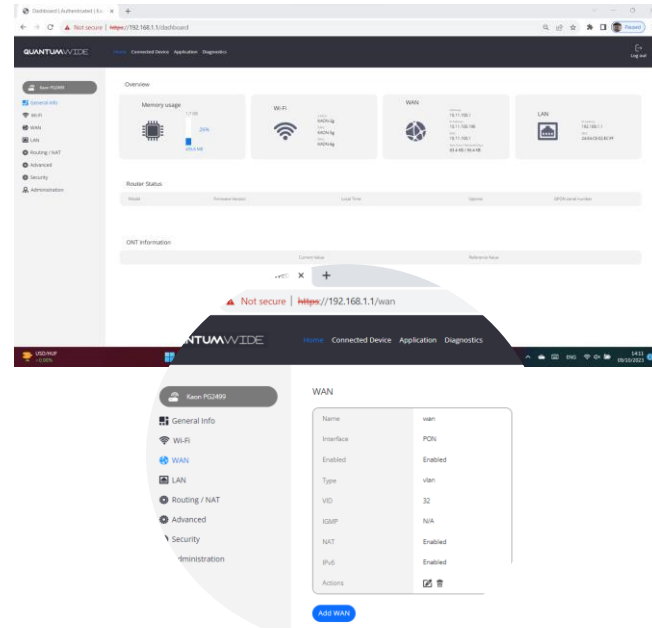


Fig.2 – prplOS Web Gui following prpl Requirements



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Maxlinear prpl Reference Platform with Wi-Fi 7



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prpl Reference Platform based on MaxLinear silicon upgraded to WiFi 7





prpl Reference Platform – WiFi 7 Upgrade

XGS-PON on board
or SFP+
(GPON, NGPON2, MOCA, 10GE, ...)

10GE WAN/LAN

5G NR option



6Ghz Wifi 7 4x4 320Mhz
5Ghz Wifi 7 4x4 160Mhz
5Ghz RX/ZWDFS
2.4Ghz Wifi 7 4x4

3x 2.5GE
Voice
USB3.2
IOT



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Matter Controller inside prpl GW with LCM-managed Container

"In this demo, using LCM, we will illustrate the deployment of a Matter controller, and how it can be managed via the HL-API to introspect the data model of Matter equipments and control them."



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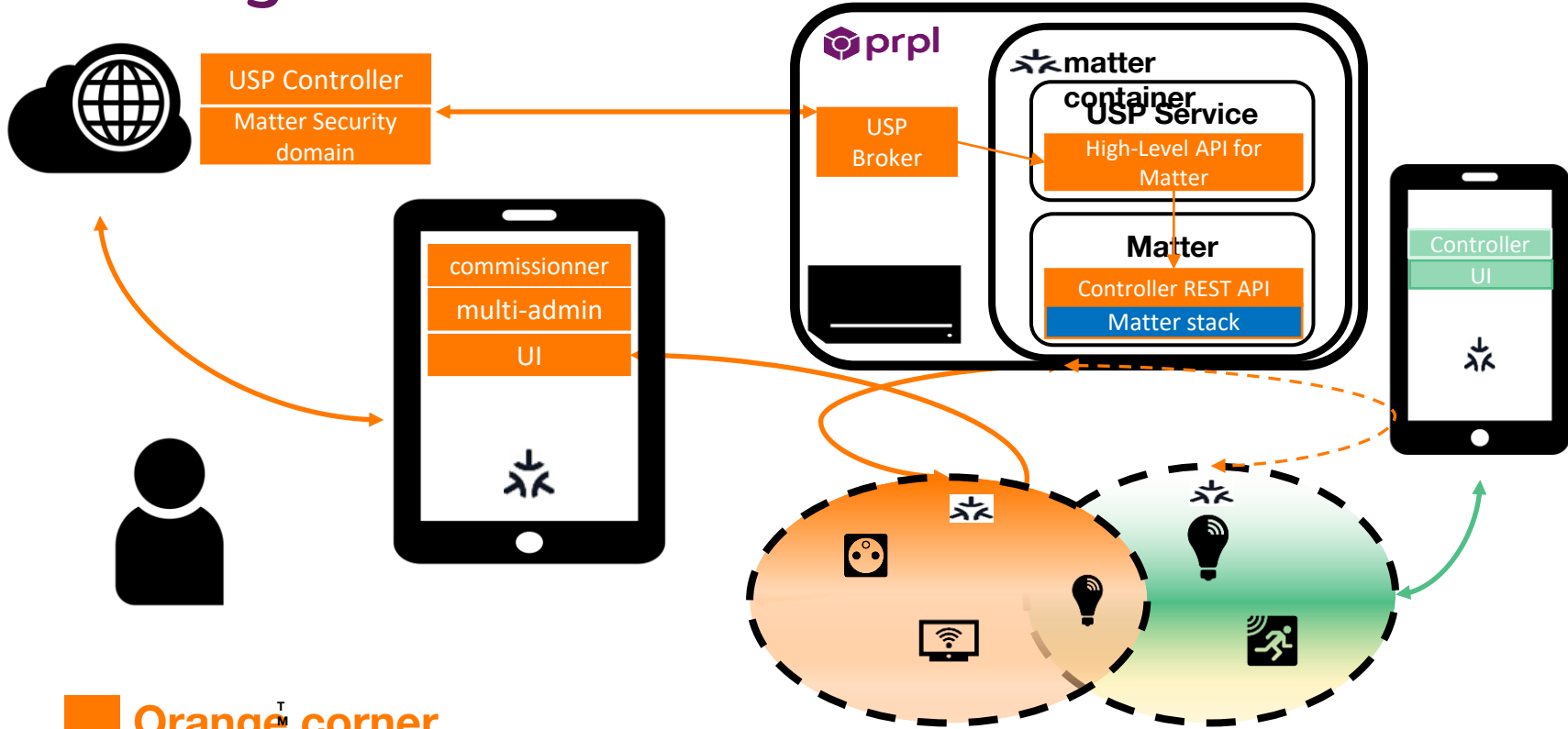
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Matter Controller inside prpl GW with LCM-managed Container



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Smart Wi-Fi

Machine learning solution driving the CPE Wi-Fi scheduler according to the individual household habits



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Smart wifi scheduler app by Orange



livebox 6 running on PRPL Os

+



data collection mechanism based on Eye'On's probe

+



A.I statistical M.L algorithms running inside:



LCM container

=



"smart & self adjustable" wifi planning

for energy saving



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AI Powered Wi-Fi Sensing with prplOS & prplLCM

Witness Origin's integration of their industry-leading WiFi sensing technology into prplOS, turning end users' everyday IoT devices into presence-aware sensors.

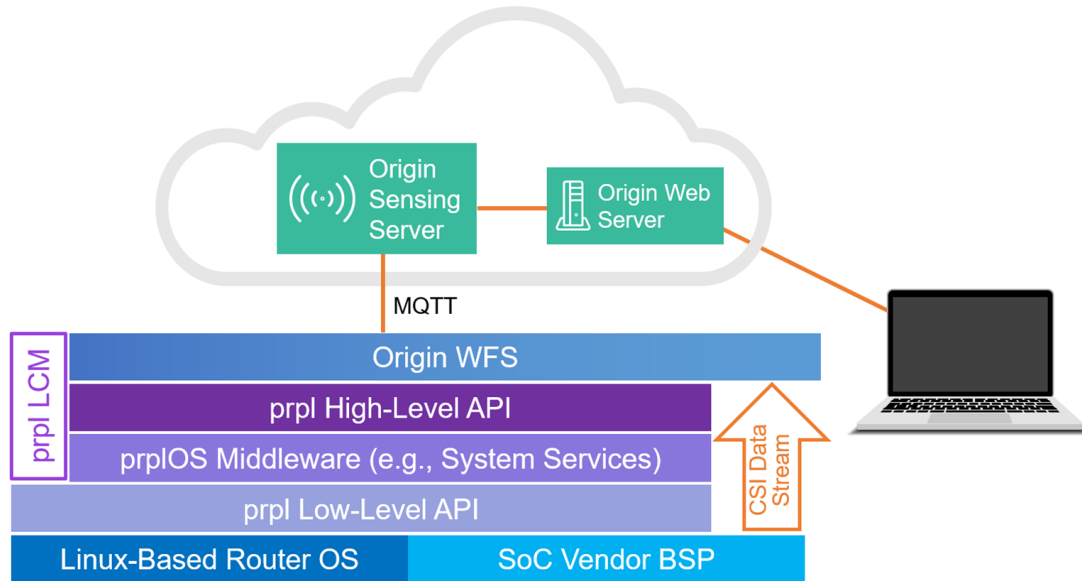


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Origin AI Wi-Fi Sensing

Enabling Broadband Service Providers to easily deploy new presence aware services using the IoT devices already in customers' homes



 **ORIGIN™**

 **Inventor of WiFi Sensing**

 **Fastest growing in the industry**

 **Most advanced AI platform**

 **Robust patent portfolio**



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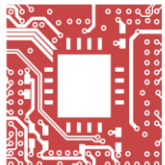
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Multipath WAN Support Leveraging porplOS

The Demo App by Promwad provides reliable and secure Internet access using multiple channels or providers and quickly switching between them, ensuring uninterrupted connection via PON, Ethernet, Wi-Fi, LTE, or 5G.



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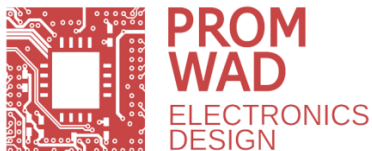
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prpIOS-based App with Multipath, Security Screening & Automation



Promwad Electronics Design Centre helps its clients launch new services and mass-produce devices for the telecom industry. Based in Europe.

For more details, visit promwad.com/telecom

As a member of the prpl Foundation, we are developing an application for prpIOS:

Multipath Support

Simultaneous connections over Wi-Fi, LTE, and 5G with multiple providers

- uninterrupted connection;
- traffic distribution for load balancing;
- bandwidth expansion;
- traffic redirection in case of failure.

Deep Security Screening & Automation

Network analysis and malware detection with traffic interception up to 50 Gbps without data loss

- traffic analysis;
- threatening event detection;
- custom scenarios for process automation.

Application Areas : Telecom | Enterprises | Automotive | Industrial | Entertainment



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Sagemcom integration of prplOS and prplMesh in a full tri-band ecosystem

Sagemcom has integrated prplOS into its tri band 10G Gateway, working as a controller of a mesh system with Sagemcom tri band extenders thanks to prplmesh

Sagemcom



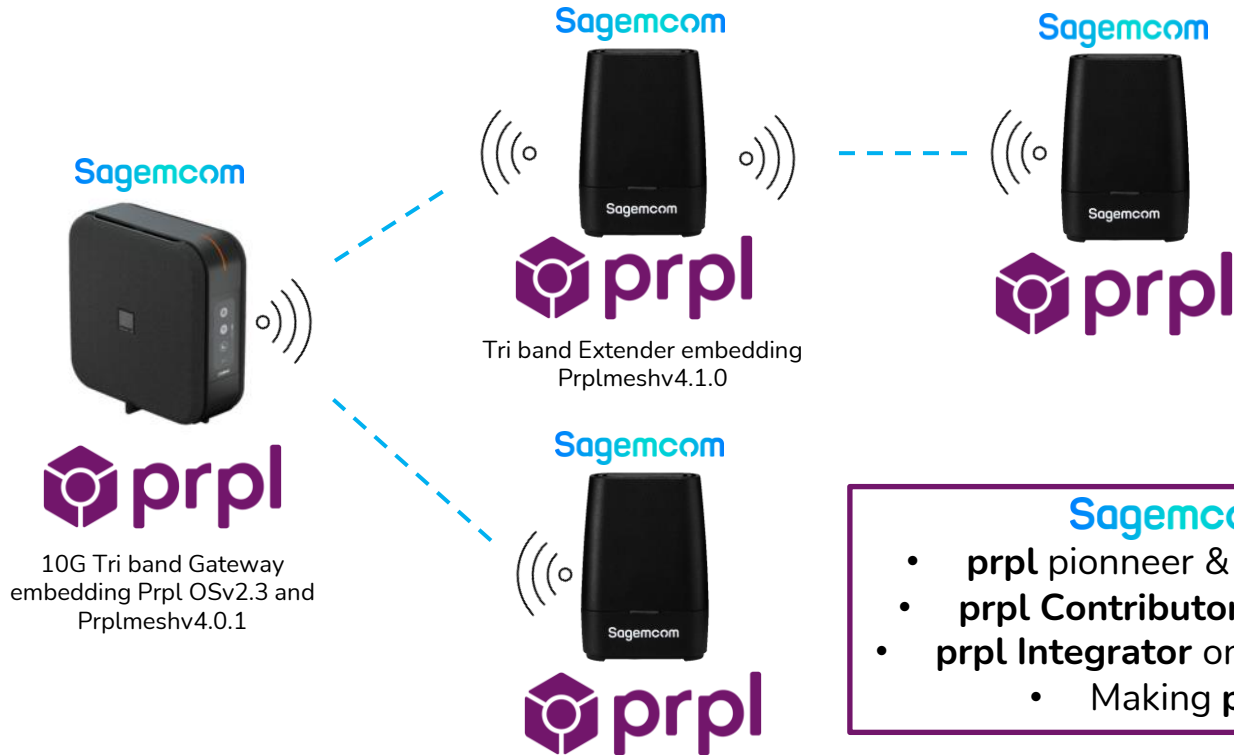
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Sagemcom integration of prplOS and prplMesh in a full tri-band ecosystem



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- Sagemcom** as
- **prpl** pioneer & **Active Member**
 - **prpl Contributor** (features, fixes)
 - **prpl Integrator** on its own products
 - Making **prpl** real!

Cybersecurity Leveraging prplOS & prplLCM

SAM will be showcasing CPE-based observability and security for connected homes and businesses, and how information can be shared with other vendors' apps running in separate containers

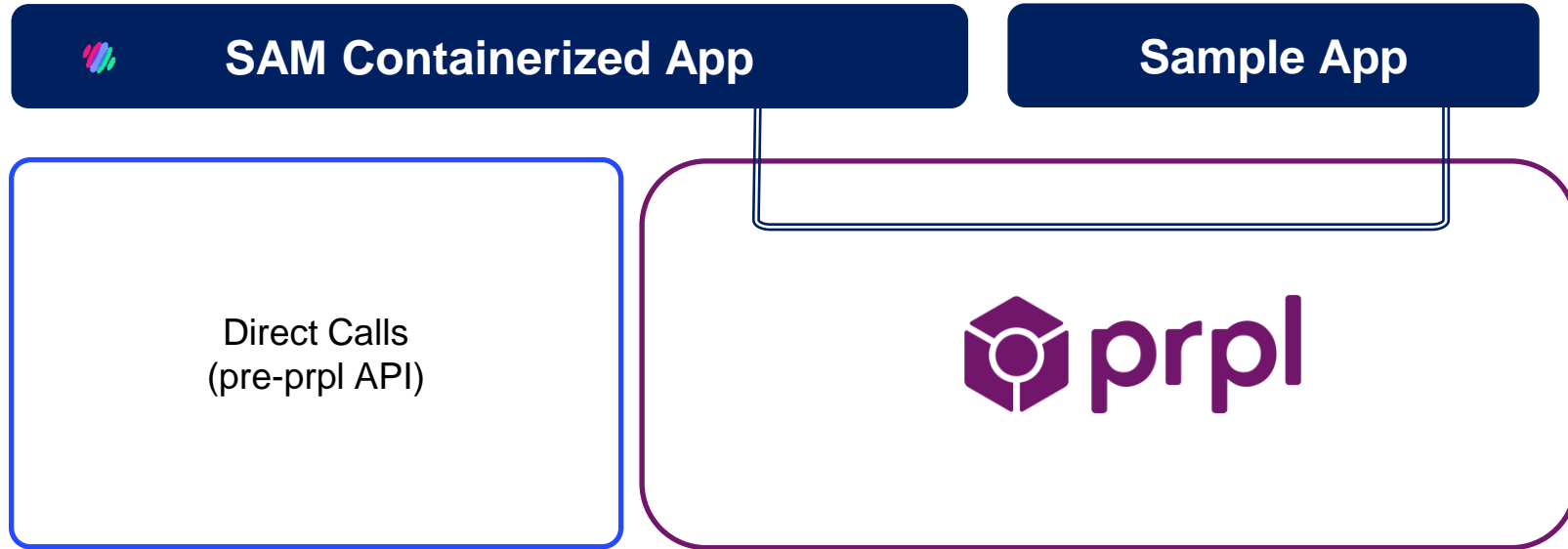


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CPE-based Cybersecurity and Observability

- 🌈 **Cybersecurity** within a container on LCM framework
- 🌈 **Observability data available** to other applications



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How prplOS & prpl LCM Enables Value Added Services

SoftAtHome demonstrates 1st party and 3rd party Value Added Services running on top of prplware, on 4 different chipset boards, and managed by SoftAtHome LCM backend



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SoftAtHome leverages prpl to deploy Value Added Services

Appstore leveraging LCM

Open Ecosystem of partners

SoftAtHome APPs running on prplWare

Ubiquitous Carrier Grade Product

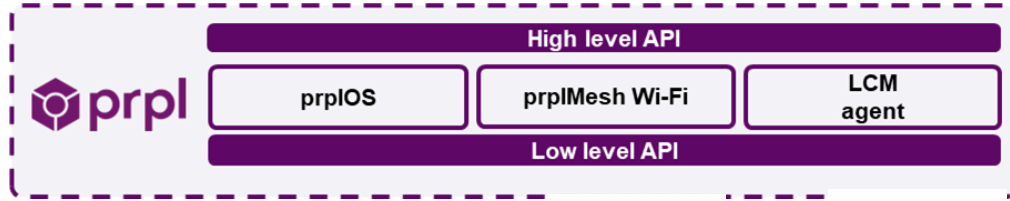
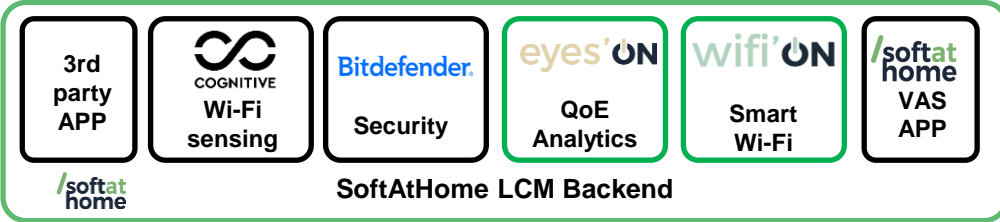
Mobile Phones

Cloud



Home Gateways

MDE Cloud Mobile APP



Enabling Wi-Fi 7 Multi-AP Ecosystem with prplOS & prplMesh

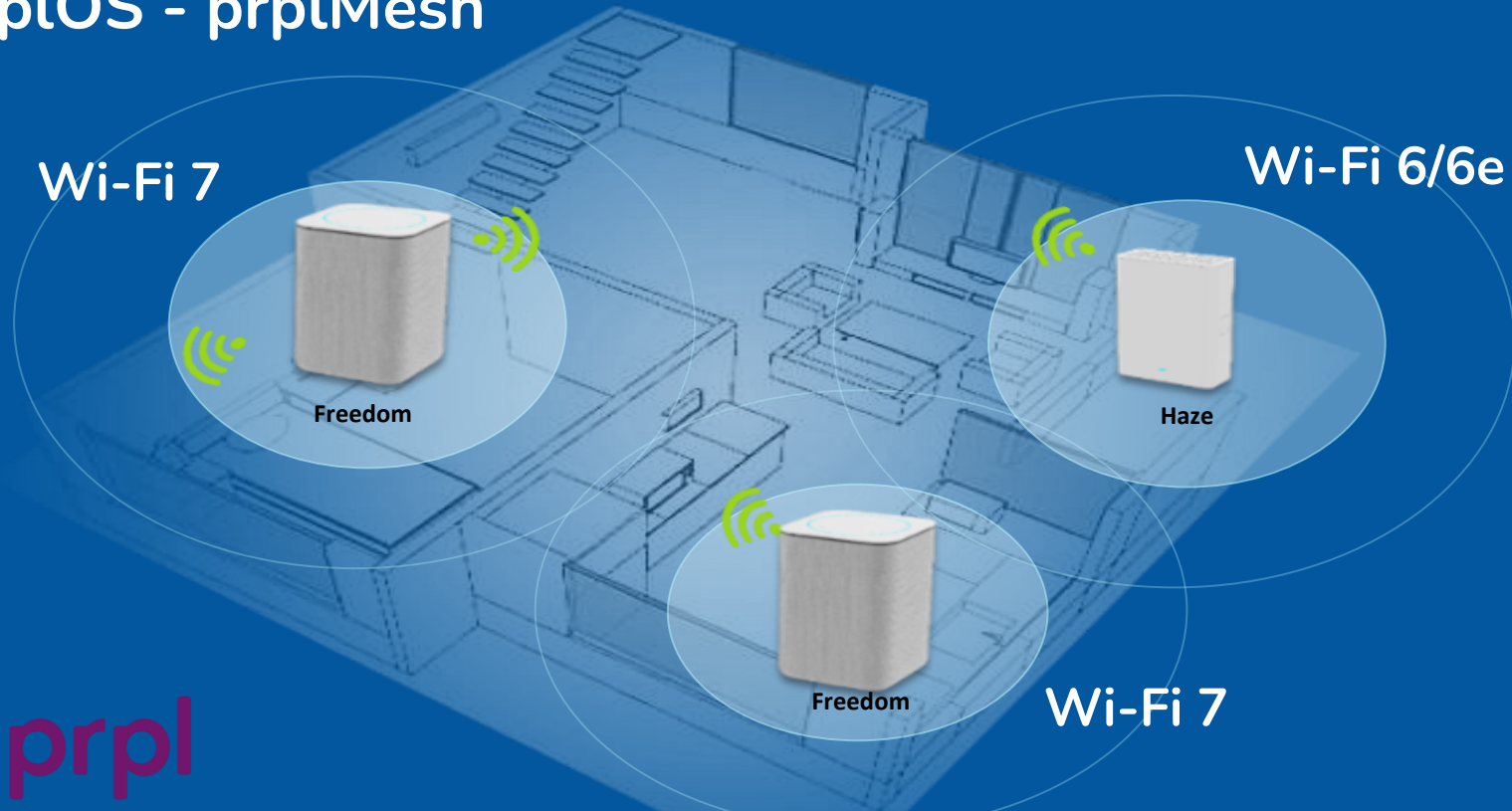
Stepping forward into Wi-Fi 7 – Onboarding, Compatibility and Interoperability with prplOS, prplMesh and RDK-B



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prplOS - prplMesh



prplOS 3.0 on Maxlinear and Qualcomm

The prplOS Working Group just announced its prplOS 3.0 release, here demonstrated on two carrier-grade HW platforms:

MaxLinear's Open Service platform and
WNC's Haze Qualcomm platform.

Please visit the demo to see prplOS 3.0 live



prplOS Working Group



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prplOS Working Group Demo



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Showing

➤ prplOS-3.0

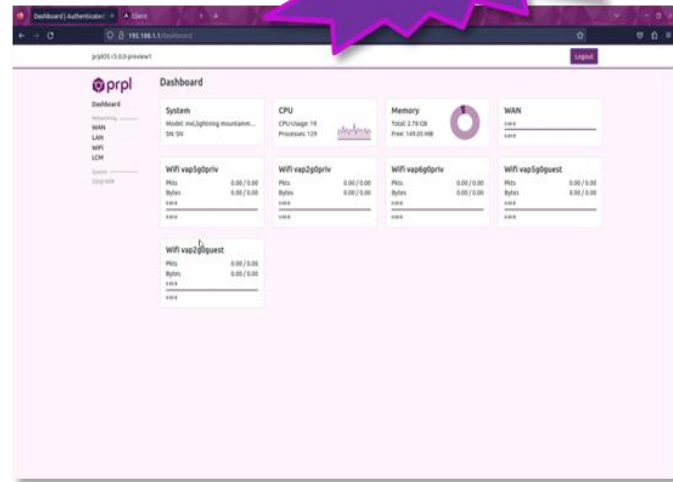
➤ OpenWrt 22.03

➤ Linux 5.15 LTS

on

➤ MaxLinear's Open Service Platform (OSP)

➤ WNC's Haze platform



Everything Wi-Fi Leveraging prplMesh

The prplMesh WG demo will showcase the latest updates to prplMesh, including 6GHz support and BSS coloring, as well as hardware and software compatibility of prplMesh.



prplMesh Working Group



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prplMesh Demo objectives & set-up



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- prplMesh topology: Controller plus multiple Agent extenders
 - Open Service Platform (OSP) HW from MaxLinear
 - prpl Haze HW platform from Qualcomm & WNC
 - RDK-B SW platform
 - 3rd-party EasyMesh Agent/extender SW implementation
- Agent on-boarding
- Client Steering (from WebUI and remotely via USP)
- BSS Coloring
- Service Prioritization
- 6 GHz (including client steering to 6GHz)
- Demonstrate multi-hop "daisy-chain" enable/disable (request from operator)

Certification Insights with the prpl Certification Working Group

Demonstrating High-Level Certification
testing leveraging CDRouter



prpl Certification Working Group



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Certification Testing Working Group

- prpl High-Level API Certification
 - prpl High-Level API [Test Plan](#)
 - Supports testing prplOS and RDK-B platforms
- prpl TR-181 [Data Model](#)
 - prplOS Release 3.0 based
- Demo Setup
 - USP MQTT on the WAN interface
 - CDRouter (13.18 or higher)
 - DUTs: MaxLinear OSP, ???



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Thank you



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