



# Wi-Fi for the AI Age

Broadcom Inc.

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# Evolution of Internet Data



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# Advent of the AI Age

# 20 Billion

connected devices

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# Advent of the AI Age

**496 Million  
Terabytes**  
data created every day

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# Advent of the AI Age

# 50 / 50

## uplink & downlink

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# Advent of the AI Age

2x

lower latency

10x

higher reliability

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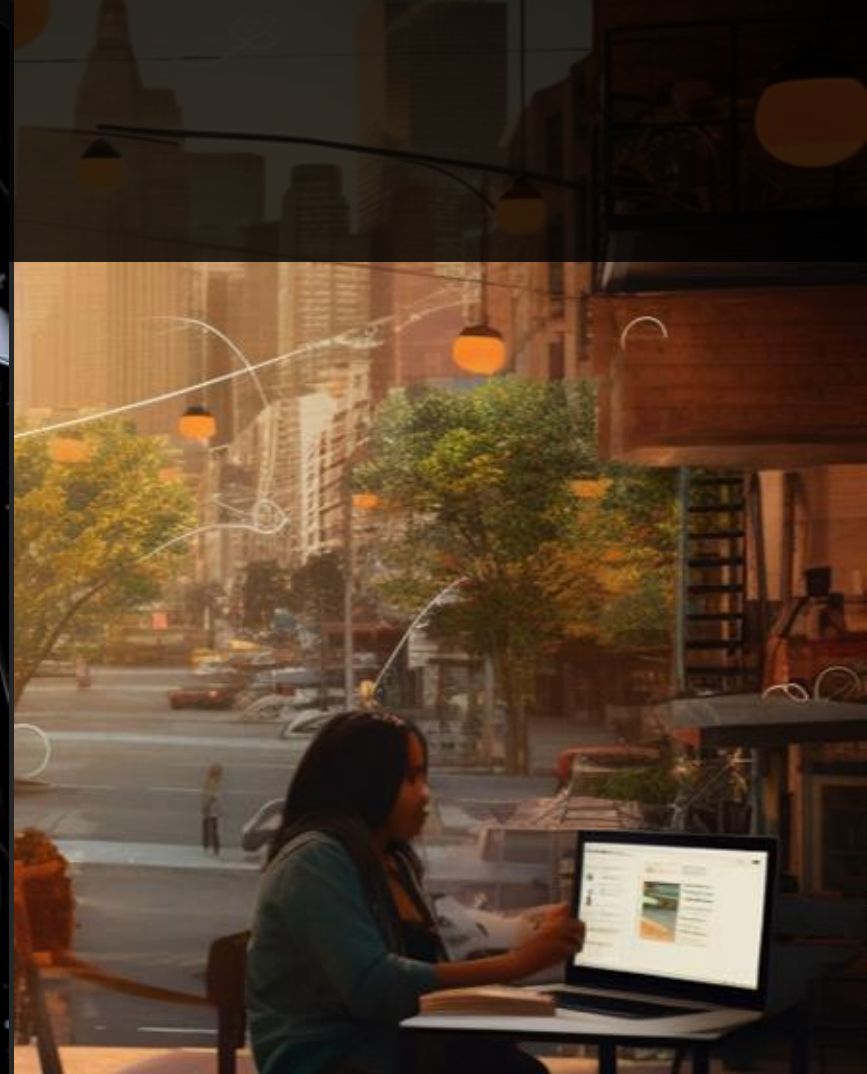
# AI = A New Edge



**Edge Compute**



**50G Broadband**



**Intelligent Wi-Fi**

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# Broadband Gateway

Perfect Edge AI Device



- 25/50 Gbps Fiber/DSL
- NPU ☐ Edge Compute
- AI-Ready Wi-Fi

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INTRODUCING

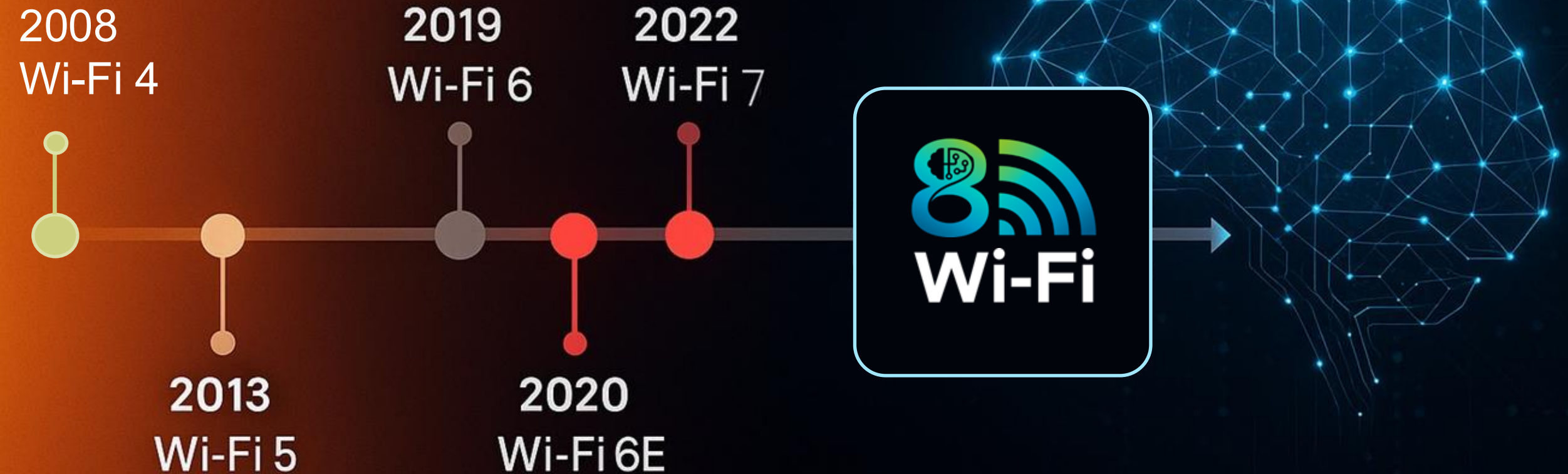


# The Wi-Fi for AI

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# Broadcom Generational Leadership



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# Wi-Fi for the AI Edge

## AI-READY

Inference workloads  
High capacity  
Low latency  
High reliability

## AI-AWARE

Context aware  
Motion sense  
Secure ranging  
Quality of service

## AI-FIRST

Adaptive  
Cognitive network  
Artificial intelligence of things  
Secure apps

## From Transport to Intelligence

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## THROUGHPUT

Unequal Modulation

Enhanced MCS

Advanced LDPC codes

## CAPACITY

Inter-AP Coordination

Non-Primary Channel Access

Dynamic Subband Operation (DSO)

Dynamic Bandwidth Expansion



## RANGE

Distributed Resource Units

Enhanced Long Range

## RELIABILITY AND QoS

Low Latency Indication

Seamless Roaming

QoS Enhancements

Prioritized EDCA

Enhanced In-Device Coexistence

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# Wi-Fi 8 Delivers Even in Congested Networks



**200%**  
higher median  
**THROUGHPUT**



**6x**  
lower P99 AI-Ready voice  
**LATENCY**



**50%**  
reduction in active  
**POWER CONSUMPTION**



**2x**  
better  
**IOT COVERAGE**

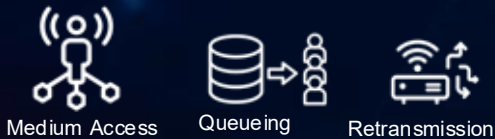
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# Ultra High Reliability $\Rightarrow$ Better Latency

## BEFORE

Delay Sources

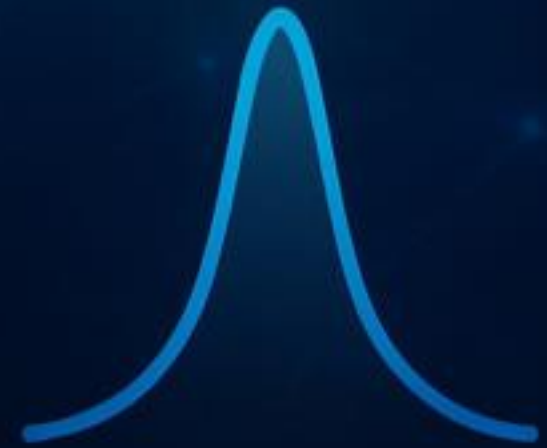


P95/P99 spikes



- Inter-AP co-ordination
- Prioritization
- In-device coexistence
- Seamless roaming

## AFTER



< P95/99 tails

Queue--   Jitter--   Collision --  
QoS++   Spectrum Utilization ++

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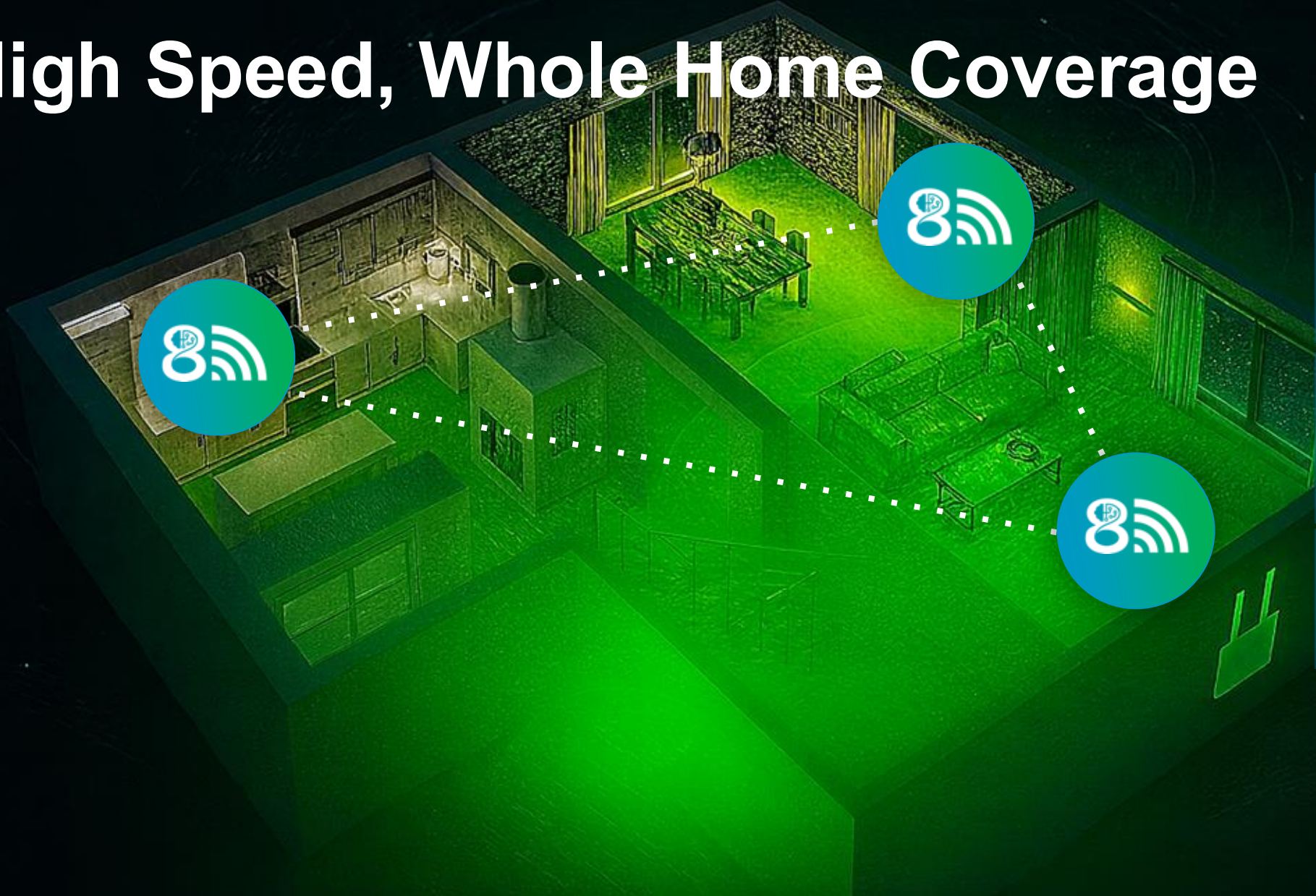
# High Speed, Whole Home Coverage



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# High Speed, Whole Home Coverage



Enhanced Roaming:  
A Unified Network  
Experience

Inter AP Coordination:  
Interference-Free Mesh  
Nodes

NPCA: Delay-Free  
Channel Access

PHY Enhancements:  
Boosting Backhaul  
Capacity

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# INTRODUCING THE WORLD'S FIRST WI-FI 8 ECOSYSTEM



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# Broadcom Wi-Fi 8 Ecosystem



**BCM43109**



**BCM6718**



**BCM43840**



**Field-of-use License**  
(e.g. IOT, Automobile)

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## BCM43109 Key Features

- 1 2x2 320 MHz Wi-Fi 8 radio
- 2 802.15.4 Support, incl. Thread V1.4 and Zigbee Pro
- 3 802.11az Wi-Fi Proximity Ranging
- 4 802.11bf Wi-Fi Sensing
- 5 Bluetooth 6: High Band / High Data Rate



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## BCM6718 Key Features

- 1 4x4 320 MHz Wi-Fi 8 radio
- 2 BroadStream Wireless Telemetry Engine for AI training/inference
- 3 BroadStream Intelligent Packet Scheduler maximizing QoE
- 4 Receiver sensitivity enhancements enabling faster uploads
- 5 Advanced eco modes resulting in 30% more energy efficiency
- 6 Generation 3 Digital Pre-Distortion reduces peak power by 25%



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## BCM43840 & BCM43820 Key Features

- 1 4x4 320 MHz Wi-Fi 8 Radio (BCM43840)
- 2 2x2 320 MHz Wi-Fi 8 Scanning Analytics Radio (BCM43820)
- 3 BroadStream Wireless Telemetry Engine for AI training/inference
- 4 Advanced location tracking capability
- 5 Advanced eco modes resulting in 30% more energy efficiency
- 6 Generation 3 Digital Pre-Distortion reduces peak power by 25%



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## Wi-Fi 8 License

1

Wi-Fi 8 Access ecosystem  
enablement

2

Complementary market for  
Broadcom merchant silicon

3

Partners license production-ready,  
best-in-class chips

4

Partners manufacture and sell  
Broadcom part

5

Partners design derivative  
roadmaps

## Field-of-use



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# Wi-Fi

## The 2<sup>nd</sup> Wave Has Arrived

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# Extending Wi-Fi 8 Leadership Position with the Introduction of BCM6719 & BCM6714



Optimized dual-band  
Wi-Fi 8 single-chip  
solution streamlining  
system design



Integrated 2.4GHz  
power amplifiers (PAs)  
to reduce system cost  
and improved RF  
efficiency



Smaller PCB footprint  
enabling more compact  
industrial designs





NEW!



BCM6719

NEW!



BCM6714



BCM6718

Radio Configuration

Optimized Dual-Band  
4x4 2.4GHz + 4x4 5GHz

Optimized Dual-Band  
3x3 2.4GHz + 4x4 5GHz

4x4 Tri-band Selectable  
2.4GHz, 5GHz, 6GHz

Full Host CPU Bypass for Wi-Fi

Yes

Yes

Yes

Integrated 2.4GHz Internal PAs

Yes

Yes

No

Gen3 DPD FEM Support

Yes

Yes

Yes

Rx Sensitivity Enhancements

Yes

Yes

Yes

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# Elevating Whole-Home AI Experiences with a Unified Wi-Fi 8 Platform



Next-generation Accelerated Processing Unit (APU), BCM4918, unifies high-performance computing, networking, and AI acceleration



Broadcom Neural Engine (BNE) AI/ML inference and acceleration provide the foundation for an AI-ready platform



Industry-leading integration of multi-gig Ethernet PHYs minimizes PCB footprints and system costs

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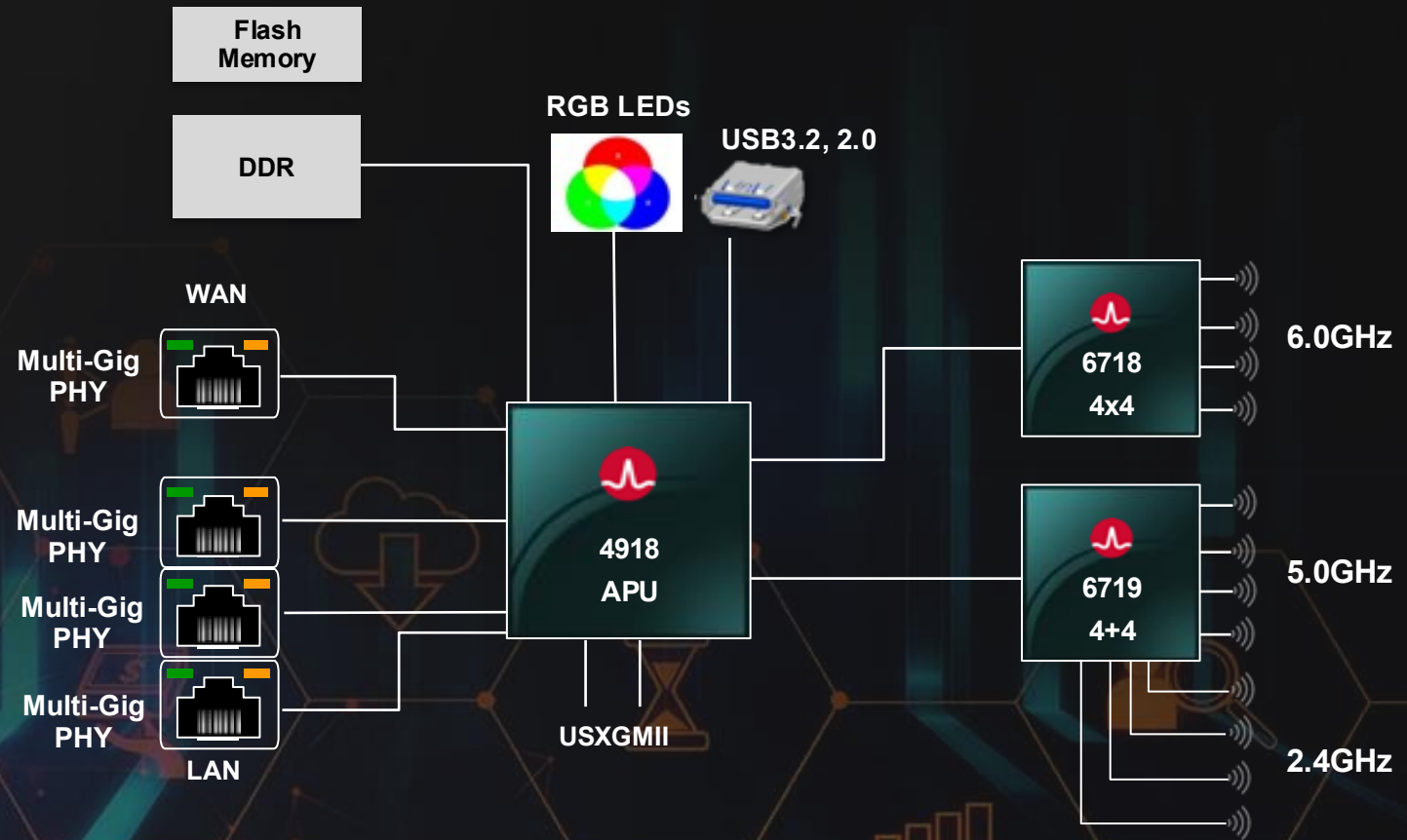
## BCM4918 APU Key Features

- 1 High-performance Quad Core v8 CPU complex
- 2 Integrated Broadcom Neural Engine (BNE) for on-device AI/ML inference and acceleration
- 3 Advanced networking engines to offload both wired and wireless data paths
- 4 Integrated cryptographic protocol acceleration end-to-end data protection without performance compromise
- 5 Integrated multi-gigabit Ethernet PHY interfaces



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# The Ultimate Wi-Fi 8 Edge AI Platform



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connecting everything<sup>®</sup>