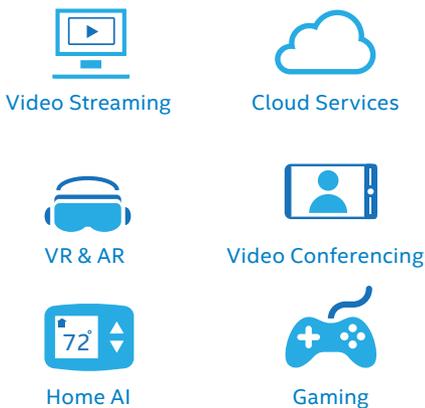# 2.5 Gb Ethernet – Raising the Bar for Wired Connectivity in the Home

Low power, cost-effective technology to increase connectivity speeds

Today's Richer Use Cases

Video Streaming

Cloud Services

VR & AR

Video Conferencing

Home AI

Gaming

Which Ethernet Connection Is Best?

2.5 GbE is the best choice on balance

Power Savings

2.5 GbE

5 GbE

10 GbE

Affordability

Is Your Home Ethernet Connection Slowing You Down?

There was a time when the typical 1 Gb Ethernet connection between your Internet router and PC was fast enough.

That's because 1 Gb bandwidth exceeded the bandwidth of your Internet provider and the connection speeds of the PCs, tablets and other connections in your home.

But that's rapidly changing. Outside the home, new last mile Internet connections are getting faster. And new connection options—such as the emerging multi-gigabit Wi-Fi 6 standard are providing data rates above 1 Gb inside the home.

Combine that with today's bandwidth-hungry and latency-sensitive usage models—such as HD and 4K video streaming, advanced gaming, VR, augmented reality and video conferencing—and suddenly your 1 Gb Ethernet connection has shifted from delivering plenty of bandwidth headroom to being a performance bottleneck.

Breaking the Performance Bottleneck with 2.5 Gb Ethernet

This increased need for speed prompted two new IEEE Ethernet standards—2.5 Gb and 5 Gb—to go along with the existing 1 Gb and 10 Gb Ethernet standards.
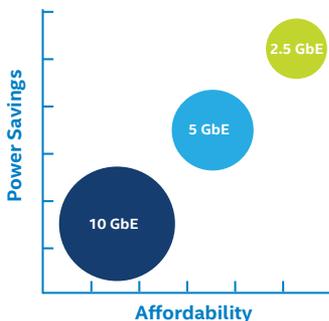
But which option is best? Why not just choose the fastest option?

There are several key factors to consider. First, what are the connection speeds into and inside the home? Broadband speeds to the home and Wi-Fi 6 are bringing faster connections that are more than 1 Gb but typically less than 2.5 Gb. Those demand equally fast Ethernet connectivity.

Combine that with the fact that 2.5 Gb Ethernet is more affordable, consumes less power, and works with existing cables — which isn't true for faster Ethernet alternatives — and it quickly emerges as an optimal choice.

Why Choose Intel's 2.5 Gb Ethernet solution?

Intel is already providing the key silicon building blocks from the cloud, across the carrier network, and all the way to the connections and devices inside and outside the home.

Now, Intel is offering its advanced 2.5 Gb Ethernet PHY/controller solution that provides great interop for the new IEEE 802.3bz standard, and can be easily integrated into devices such as enterprise switches, gateways, Ethernet routers, PCs and Wi-Fi routers. It's a complete, integrated solution that provides an array of connectivity possibilities, beyond just the 2.5 Gb Ethernet connection to the PC.

The Intel® Ethernet Connection GPY211/GPY212 offers many advantages:

- Low power consumption
- Supports industrial temperature specifications
- Small footprint
- Advanced features
    - Innovative security (MACsec)
    - Energy Efficient Ethernet (EEE)
    - Smart AZ
    - Time-Sensitive Networking (TSN)
    - LED brightness control
    - Power over Ethernet (PoE)
- Best-in-class RBOM
    - Single power supply with integrated DC/DC
    - BOM similar to 1 Gb Ethernet PHYs

Learn more about how Intel is transforming home connectivity at: www.intel.com/connectedhome

Take Advantage of Today's Faster Connections

Internal LAN Connections
Bandwidth

1 G Ethernet	1 Gbps
Wi-Fi 6 (2x2, 160 GHz)	~2.4 Gbps
2.5 G Ethernet	2.5 Gbps

External Internet Connections

| 5G Wireless | ~10 Gbps |
| 10 Gb Coax | 10 Gbps |