Pivotal Commware

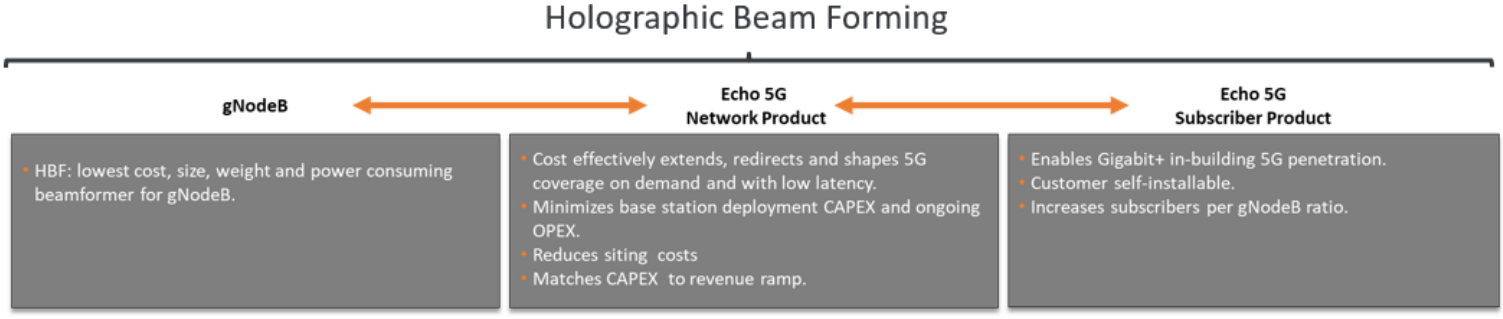
A World of Limitless Connectivity

Echo 5G®

Pivotal Commware developed the Echo 5G® product line so 5G service providers using millimeter wave frequencies can deliver superior broadband experiences to more subscribers at less cost.

The **Echo 5G Subscriber** product uses Pivotal's patented Holographic Beam Forming® (HBF) to counteract window penetration and reflection loss so consumers and enterprises can enjoy Gigabit speeds beyond the reach of cable and DSL. HBF offers the lowest available size, weight and power consumption beamformer profile so subscribers can install Echo 5G themselves. Besides saving on installation costs, service providers can reach more subscribers using fewer base stations. Echo 5G is the technology enabler that 5G service providers need to close the millimeter wave business case for serving fixed and mobile subscribers with higher performance.

The **Echo 5G Network** product comprises two back-to-back Echo 5Gs cooperating to route and shape RF energy around obstacles like buildings and boost coverage to extend the range of the 5G base station. This way, service providers can organically grow the 5G coverage footprint while avoiding costly base station deployment. These products, along with 5G base stations, benefit from HBF as an essential element of the 5G ecosystem:



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Key attributes of the Echo 5G product line include:

Echo 5G Network

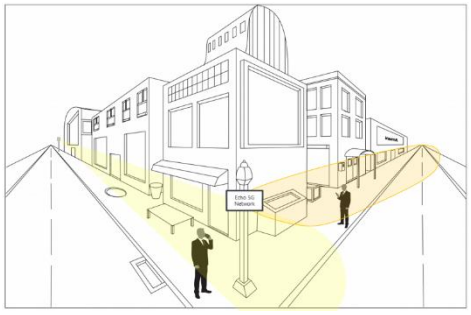
- Professionally installed on-the-pole/building RF repeater
- Narrow and steerable beam towards gNB, steerable and customizable beam towards service area
- Incredibly low latency (< 5 ns)
- Robust ODU with HBF antenna and RF Front End functions
- Low power consumption (< 20 Watts)
- Simple auto acquisition and auto ranging functions
- Gbps service extended up to 1000 ft
- Compatible with 5G TF, 5G NSA EN-DC and 5G SA, etc.
- Cloud based remote OA&M and optimization functions via LTE Cat M1 remote connectivity

Echo 5G Subscriber

- Self-installing on-the-window RF repeater
- Overcomes standard and low-E glass penetration loss by adding up to 30 dB to the mmWave link budget
- Overcomes reflection loss by scanning +/- 80° in azimuth, +/- 30° in elevation
- Narrow and steerable beam towards gNB, wide static beam towards indoor CPE/UE
- ODU with HBF antenna and RF Front End functions, wirelessly powered through the window (< 20 Watts)
- IDU with wireless power module and AC adapter interface
- Self-commissioning with auto acquisition and auto ranging functions
- Enables bi-directional Gbps service indoors at distances up to 1 kilometer from the base station
- Compatible with 5G TF, 5G NSA EN-DC and 5G NR SA, etc
- Small form factor, 7” x 7” x 1”, less than 2 lbs
- Cloud based remote OA&M and optimization functions via LTE Cat M1 remote connectivity

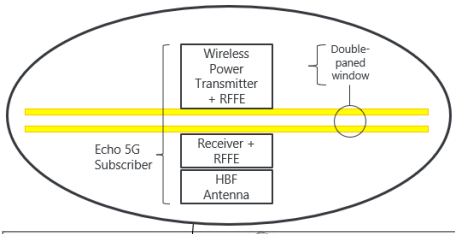
Echo 5G Network

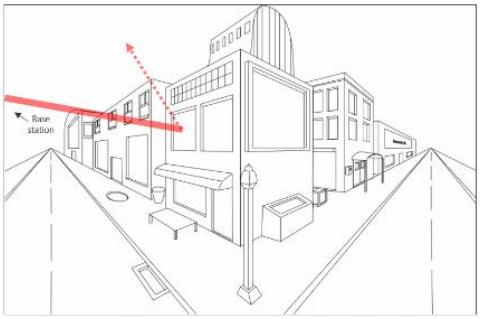
No Echo 5G



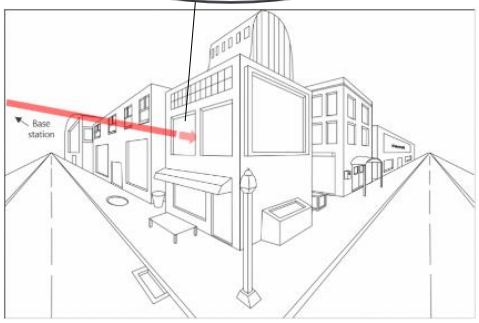
Echo 5G

Echo 5G Subscriber





No Echo 5G



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