



Why B2B 5G+Edge Computing

A Guide for Business Decision Makers
at Enterprises



OVERVIEW:

- 5G and edge computing for B2B are expected to be a \$1.5T economy by 2030 (ABI research)



- 5G+edge computing will provide superior connectivity, slash OPEX, create new revenue streams, and improve customer wellbeing for enterprises

WHAT IS 5G?

On the surface, 5G appears to just be a natural evolution to 4G/LTE; a way to download movies faster to your next generation smartphone. While that is true, the real promise of 5G is so much more grand and will revolutionize the B2B space.

5G possesses some unique technical and business attributes that allow its potential impact to be so massive.

5G Technical Benefits

5G has numerous [technical attributes](#) as shown in the table below.

<p>Faster data rate</p> <p>Peak rate 10 Gb/s (50x)</p>	<p>Lower end-to-end latency</p> <p><5ms (10x lower)</p>	<p>High reliability</p> <p>99.999% availability</p>
<p>Large number of IoT devices</p> <p>1M/km² (100x)</p>	<p>Network Slicing</p> <p>Carve up a 5G pipe into virtual ones, each with a different SLA</p>	<p>Energy efficient</p> <p>10% of today</p>
<p>Rapid service deployment</p> <p>In minutes</p>	<p>Large mobile data volume</p> <p>10 Tb/s/km² (1,000x)</p>	<p>Greater mobility support</p> <p>500Km/h</p>

Table 1: 5G Technical Attributes (source 3GPP, Verizon, Cisco, Intel)

Along with these technical benefits, 5G also brings a number of [business attributes](#):

Software Driven	Disaggregated Supply Chain	Public↔private business models
Cloud-based technologies	Best-in-class vendor selection	Spectrum reuse, slice peering, public slice, roaming, anchoring

Table 2: 5G Business Attributes

The combination of these technical and business attributes will unleash B2B applications. In fact, ABI Research projects the [B2B 5G economy will be \\$1.5T by 2030](#).

STL partners, a market research firm, predicts industry verticals ranging from manufacturing, transportation & distribution, retail, health, energy & extractives, construction, agriculture, and media, sports & entertainment will transform due to 5G.

“5G is not just an evolution in technology but a revolution with the power to drive major technological change in both the public and private sectors.”

National Spectrum Consortium

WHAT IS EDGE COMPUTING?

Edge computing is mentioned in the same breath as 5G. So what is edge computing and how does it relate to 5G?

Edge computing is simply bringing cloud technologies physically closer to the user to cut latency, increase downstream bandwidth, reduce upstream bandwidth, or for compliance reasons. Edge applications will range from AR/VR, 360° video, cloud gaming, ad insertion, AI/ML inference engines, CDN, drone control, robot control, IoT, edge analytics, and more. Chetan Sharma Consulting predicts that [edge computing will grow to a \\$4.1T economy by 2030](#) as numerous applications start to be hosted on the edge. As compared to the cloud economy, this represents a 4x faster growth.

Strictly speaking, edge computing is independent of 5G, but there is a strong tie-in. Since 5G is software driven, the radio area network components need an edge to run on. In other words, 5G, by definition, requires edge computing. Now that you have an edge to run 5G, why not run other edge computing applications?

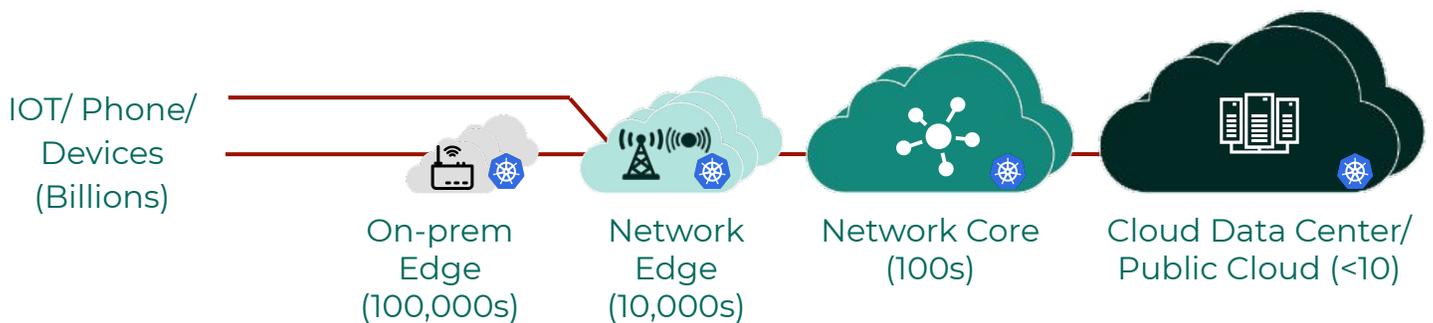


Figure 1: Edge to Core to Public Cloud Architecture

BENEFITS OF 5G+EDGE COMPUTING

5G+edge computing bring numerous B2B benefits.

Benefit	Requires 5G*?	Requires Edge Computing?
Wireless Connectivity	Yes	No
Reduced OPEX	Yes	Yes
New Streams of Revenue	Yes	Yes
Higher Customer Satisfaction	Yes	Yes

Table 3: Benefits of 5G+Edge

BENEFIT#1: WIRELESS CONNECTIVITY

Environments such as factories have largely relied on wired technologies to get the appropriate network reliability, predictability, and latency characteristics. Wired networking technologies are expensive to install, require real-estate, and need maintenance. Private 5G has the potential to replace wired technologies in these sensitive environments.

Moreover, environments such as farms, oil fields, and mines may not even have connectivity to begin with since they are not well suited to wired technologies. Such environments can take advantage of Private 5G for solid networking connectivity.

Of course there are alternatives to Private 5G. Private LTE and Wifi6 can also offer wireless connectivity. However, Private 5G is superior for the below reasons:

Benefit	Private 5G	Private LTE	Wifi6
Availability of Spectrum*			
Native Security			
Ease of Device Mgmt.			
Network Slicing			
Edge Computing			
Number of Devices			
Network Reliability			
Low Latency			
Deterministic Behavior			
Mobility Support			
Mgmt. Standards			
UE Battery Life			

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Table 4: 5G Connectivity and Alternatives

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BENEFIT#2: OPEX SAVINGS



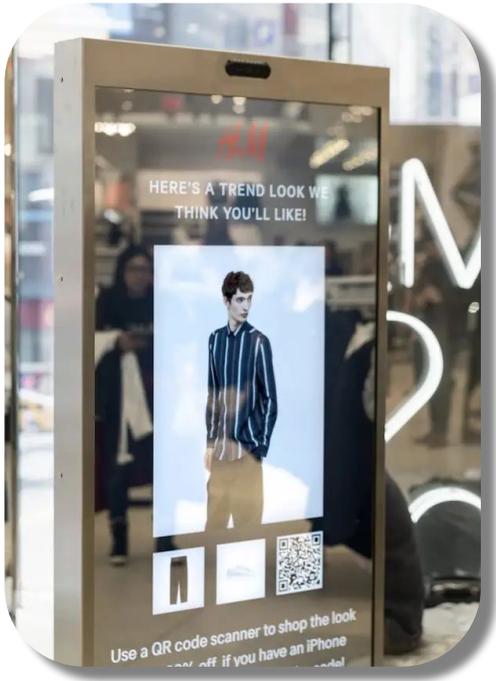
The next compelling benefit of 5G+edge computing is the promise to save operating expenses (OPEX). For a factory, this could be via robotics control, autonomous vehicles, AI/ML quality inspection, IoT management, and more. For a hospital, it could be through radiology anomaly detection at the edge. For precision agriculture, it could be via drone control and IoT management. Video surveillance applications could be used for retail store security to slash costs. Smart building applications could cut energy costs and optimize space utilization with 5G+edge.

BENEFIT#3: NEW REVENUE STREAMS

Depending on the industry, 5G+edge computing could bring in new streams of revenue. Areas such as sports, media & entertainment, education/training, and communication platforms could see increased revenue through applications such as CDN, AR/VR, tailored ad-insertion, 360° video, cloud gaming, and others. In fact stadium edge trials have shown higher engagement levels via edge applications that let attendees view the game from a large number of camera angles—which translates to more stadium-goers.



BENEFIT#4: CUSTOMER WELL BEING



Even if a particular application does not directly generate new revenue, it could boost customer well being and satisfaction. VR pain or autism management edge applications have shown great promise in treating patients. A 2017 study published in *JMIR Mental Health* showed patients using VR reported a 24% drop in pain scores. A voice recognition edge application in a store answering common questions, such as the location of an item or a smart mirror allowing virtual clothing “try out,” will significantly boost customer satisfaction.

ABOUT AARNA NETWORKS

5G and edge computing are a once-in-a-generation disruption, and we are addressing the management problem. Our [Aarna Networks Multi Cluster Orchestration Platform](#) (AMCOP) is an open source product that performs orchestration, lifecycle management, and real-time policy-driven control loop automation of 5G network services and edge computing applications. We are based in San Jose, CA and Bangalore, India.

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