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Solve 5G Data Challenges With More Intelligence at the Edge

The effects of 5G will be felt far beyond blazing fast data for mobile phones — speeds that enable HD movie downloads in seconds.[1] As 5G exponentially increases the amount of data we use, generate and store, compute must continue expanding beyond the cloud — to the physical network and devices at the network edge.

5G Expands Where Compute Happens

4G and the Cloud
Most data is stored, analyzed and aggregated in centralized data centers in the cloud
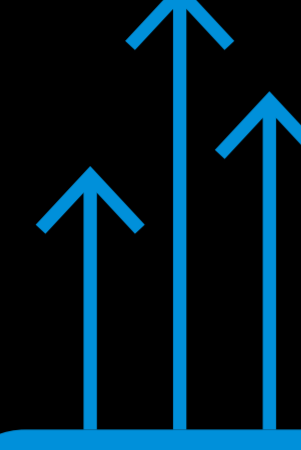
The majority of data generated crosses the 4G network

5G and the Intelligent Edge
Some data is sent to the cloud for long-term storage and additional processing on focused data sets

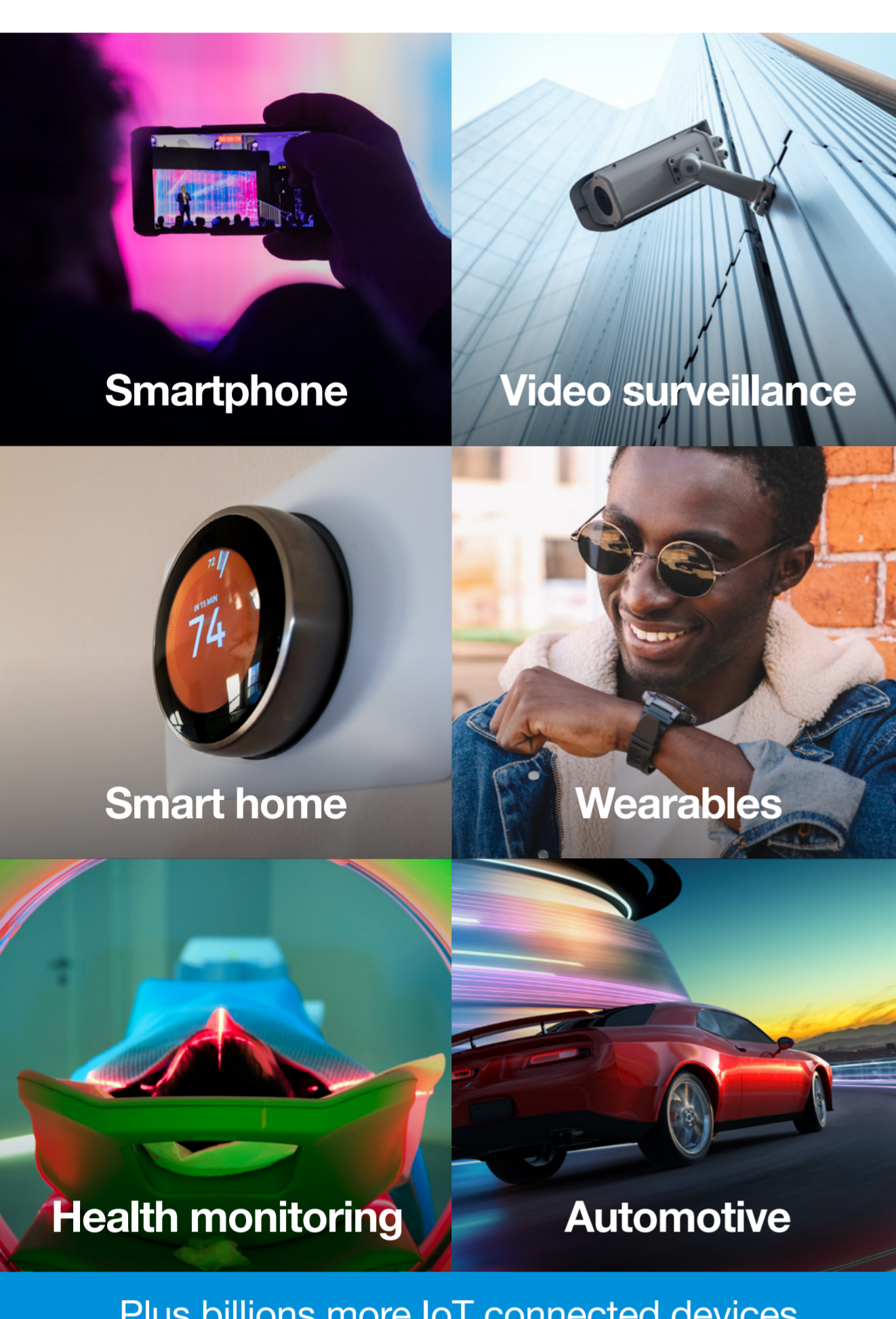The majority of data generated is stored, analyzed and aggregated at the intelligent edge

Data at the Intelligent Edge

What Is the Intelligent Edge?

This is the growing set of connected systems and devices at the physical network edge where data is analyzed and aggregated close to where it is generated.
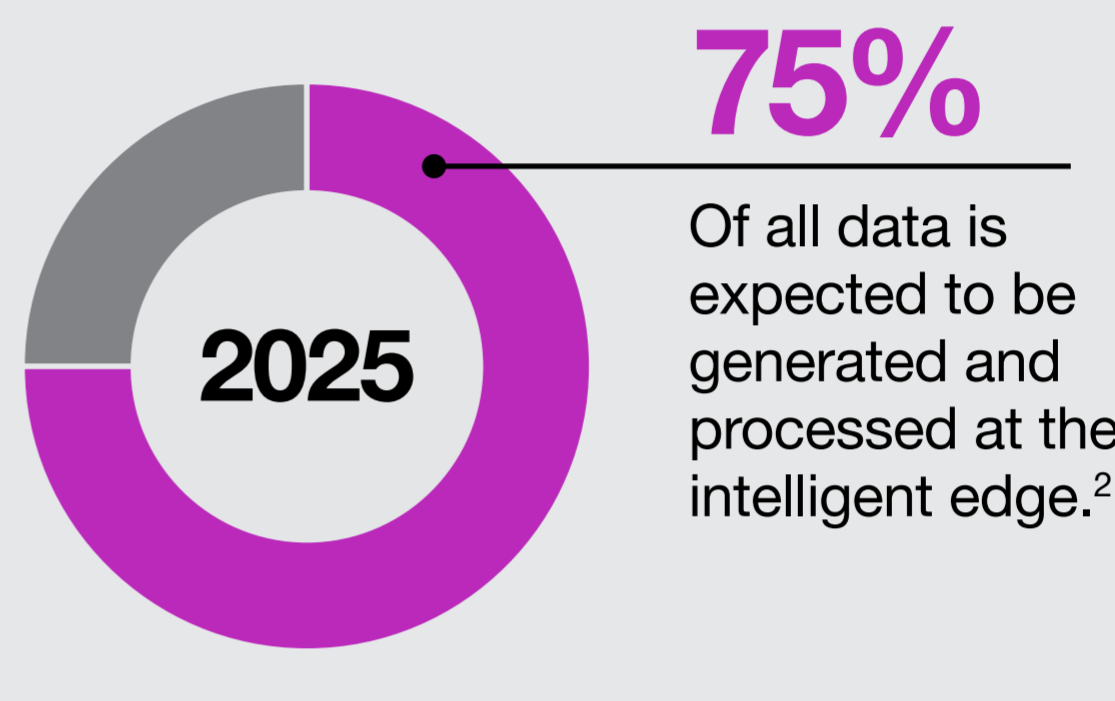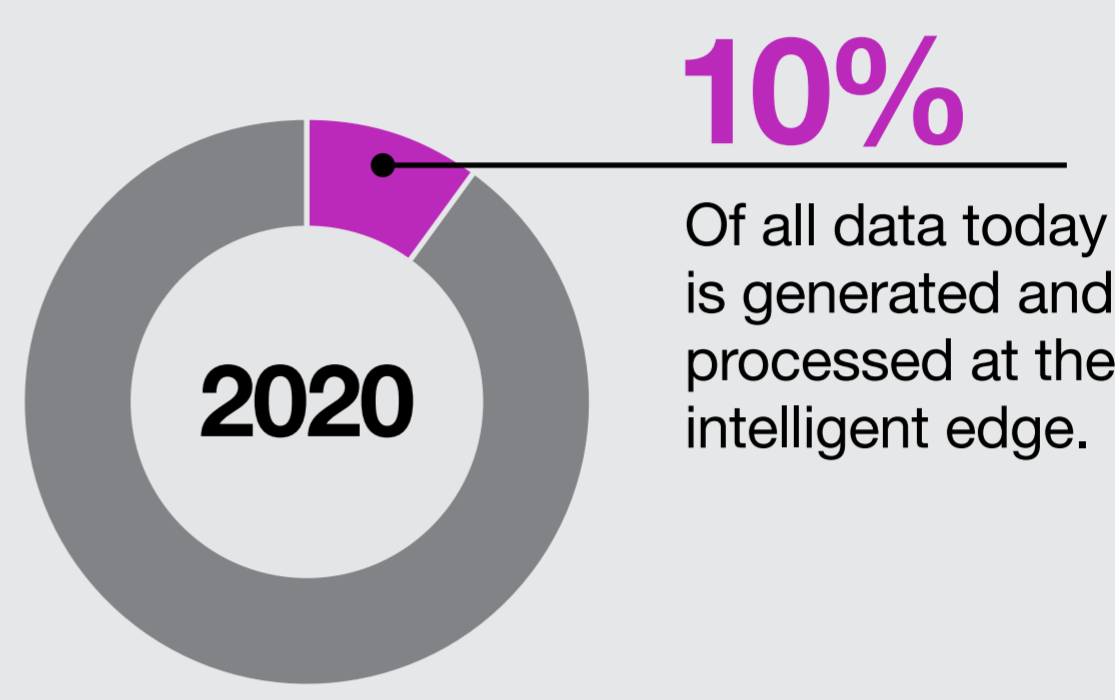
Edge Devices
Expanding intelligence means giving 5G-connected edge devices and the internet of things (IoT) the computing horsepower that was once exclusive to servers, PCs and smartphones.
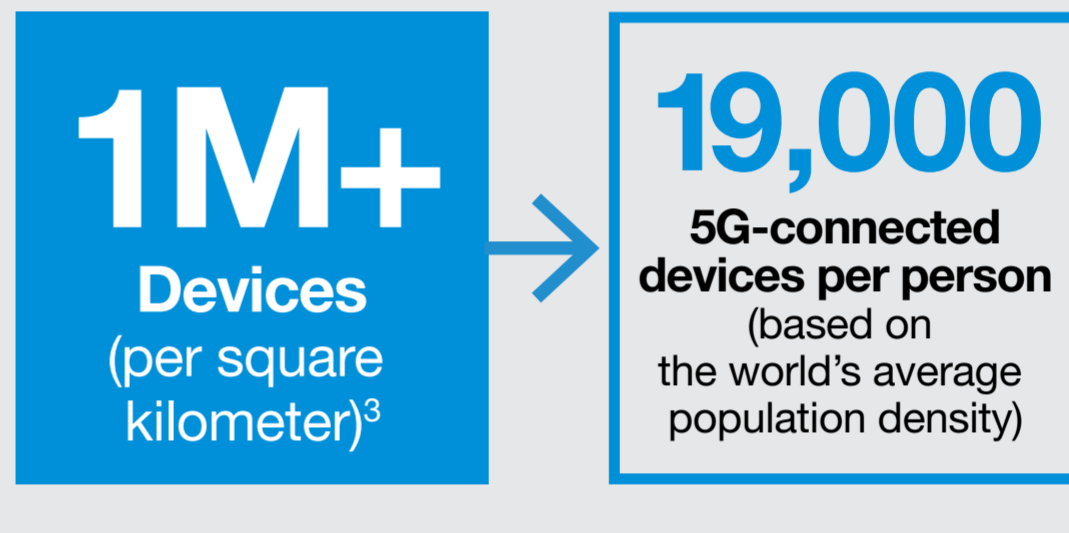
Smartphone

Video surveillance

Smart home

Wearables

Health monitoring

Automotive

Plus billions more IoT connected devices

Facts About Data at the Edge

2020

10%
Of all data today is generated and processed at the intelligent edge.

2025

75%
Of all data is expected to be generated and processed at the intelligent edge.[2]

A 5G cell is expected to support

1M+ Devices (per square kilometer)[3]

→ **19,000** 5G-connected devices per person (based on the world's average population density)
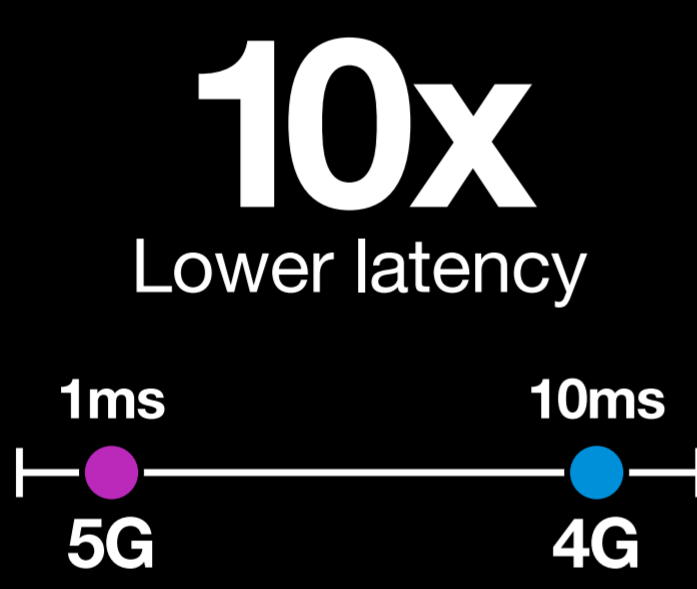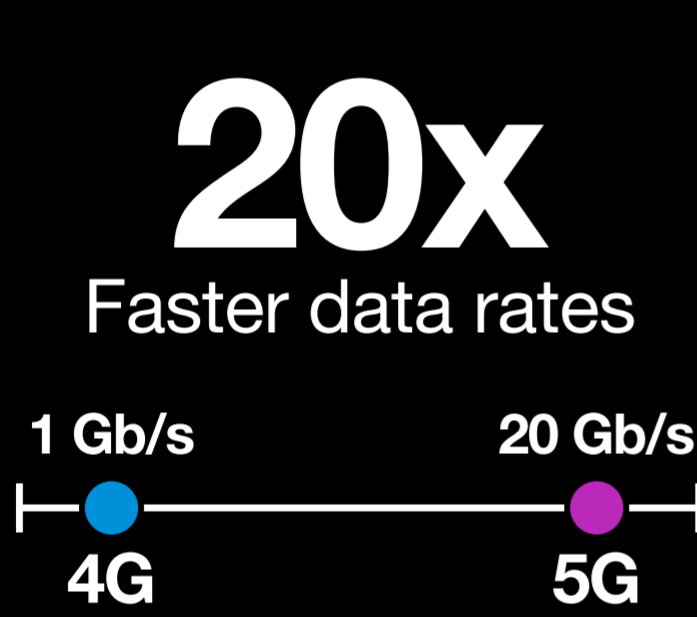
5G Generates More Data Faster

The massive amounts of data from 5G-enabled devices make edge intelligence critical to avoid overwhelming data centers with mountains of data.[4]

20x Faster data rates
1 Gb/s — 4G
20 Gb/s — 5G

10x More connected devices (1M per sq km)
100K — 4G
1M — 5G

10x Lower latency
1ms — 5G
10ms — 4G

7x More data traffic (per month by 2021)
7.2EB — 4G
50EB — 5G

More Memory and Storage Are Needed to Overcome 5G Data Challenges at the Edge

Data challenges have extended beyond the cloud. They can be solved with advanced memory and storage at the network edge.

	Challenge	Solution
Data and Device Volume	Unprecedented amounts of data will be generated from more connected 5G devices.	Scalable, high-bandwidth storage and memory are needed to keep growing quantities of data moving fast.
Responsiveness	Processing data in the cloud delays the real-time response (low latency) required for 5G-connected edge devices.	High-bandwidth, low-latency memory and storage in edge devices enable near-real-time analysis and processing.
Data Security	That data must be protected where it was generated.	Security embedded directly in flash memory hardware helps protect data where it is created and consumed.

Micron Memory and Storage Are the Heart of the Intelligent Edge

The key to creating more intelligence in 5G-connected edge devices lies in enabling data to be stored, moved, processed and secured efficiently. Micron's expansive portfolio of memory and storage products helps solve 5G's data challenges.

Low-power DRAM
High-performance memory quickly processes data in battery-powered devices so they can return to an energy-efficient sleep mode.

NOR flash memory
Low-latency, high-endurance memory delivers reliable code and data storage for applications requiring fast boots, random-read access and low-density data storage.

Automotive-grade memory
Multichip packages and low-power DRAM are suitable for advanced driver-assistance systems (ADAS) and levels 4 and 5 autonomous vehicles.

MicroSD cards
Consumer- and industrial-grade storage cards deliver blazing fast file transfers with high endurance and video recording redundancy.

Micron Authenta™ technology
Chip-level security guards 5G-enabled devices against unauthorized access and malware.

Mainstream DRAM
Affordable memory provides high-speed data retrieval for edge devices.

3D managed NAND
High-capacity and high-performance storage holds massive amounts of 5G data where it is created.

Learn more:
micron.com/5gmemory

Sources
[1] Let's Talk, "5G vs. 4G"
[2] Gartner, "What Edge Computing Means for Infrastructure and Operations Leaders"
[3] Lifewire, "5G Speed: How to Understand the Numbers"
[4] Qorvo, "Getting to 5G"

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