

# TECHNOLOGY APPLICATION GUIDE

## Wireless Connectivity at your Facility



### WHAT IS IT?

Wireless encompasses a number of areas within your facility. It covers everything from using your smart phone in the building to using your tablet and possibly your laptop as well. In addition, some of the systems that are run within your building use wireless as well (sensors, HVAC, lighting, etc.).

When you use your smart phone to talk to someone, you are on the cellular network. This network typically uses 3G for voice, although some carriers are starting to use 4G (LTE) for voice (VoLTE). LTE is truly a standard for data so VoLTE operates in a similar way to VoIP. Only the latest phones have VoLTE capabilities and the carriers have not rolled this out nationwide yet.

Depending on the age of your device, your smart phone is most likely using LTE for cellular data service. Some older phones may use the 3G networks, but a majority of users are on LTE today. LTE speeds can exceed that of older 802.11 standards, so people may rely on the cellular network

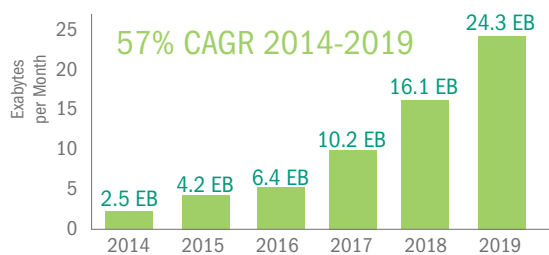
versus the Wi-Fi network. This is changing as Wi-Fi has come out with its latest version, 802.11ac, which has significant increases in speed and bandwidth. Another version is due to launch in late 2015 that will continue to improve speed and bandwidth.

Another area of wireless within your facility is the control of systems like HVAC, lighting and other sensors. These systems can be driven over a ZigBee® mesh network. These networks can grow to a large size and use small bursts of data to control and monitor these systems. In these networks, each device transmits data to surrounding devices. The data continues to flow until it is offloaded to an Ethernet network. This allows for easy data flow even if one of the devices experiences a fault.

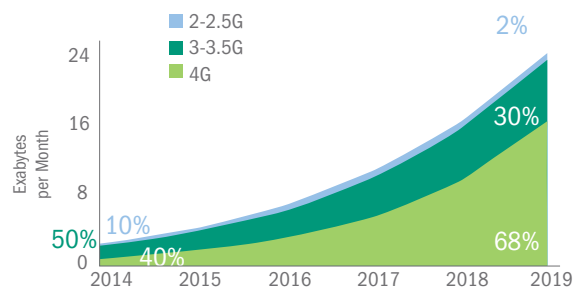
Access control will drive an opportunity for technology such as NFC (Near field communication). Finally, Bluetooth® is an option for peripheral devices which are used without cords.

Market name standard	Wi-Fi 802.11ac	LTE	ZigBee 802.15.4	NFC	Bluetooth 802.15.1
Application focus	Web, email, video	Wide area voice and data	Monitoring and control	Payment and access control	Cable replacement
Battery life (days)	0.5-5	1-7	100-1,000+	1-7	1-7
Network size	32	1	Unlimited (2G.)	1	7
Data rate (Mbps)	870-1300	300	0.250	0.424	2-3
Transmission range (meters)	1-100	1,000+	1-100+	0.010	1-10+
Success metrics	Speed, flexibility	Reach, quality	Reliability, power, scalability, cost	Authentication, convenience	Cost, convenience

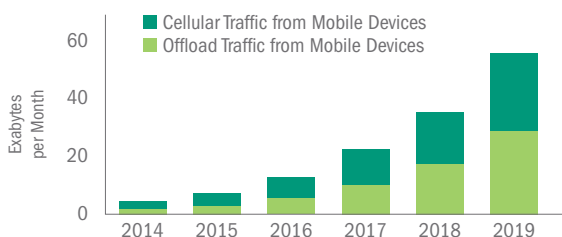
Cisco Forecasts 24.3 Exabytes per Month of Mobile Data Traffic by 2019



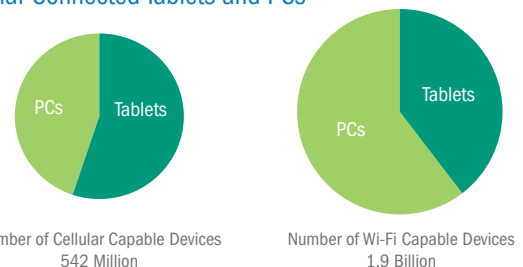
By 2019, 68 Percent of Total Mobile Data Traffic Will Be 4G



By 2019, 54 Percent of Total Mobile Data Traffic Will Be Offloaded



By 2019, Wi-Fi Will Connect Nearly 3.5-Fold Cellular Connected Tablets and PCs



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Delivery Tool	Application	Considerations	Impacts
Wi-Fi	Phone, Tablet, Laptop, Fitness Trackers, Lighting	Robust Wi-Fi to provide a data network with adequate bandwidth	Employees and customers are able to access data anywhere. Allows for strong BYOD policy
LTE	Phone, Tablet Laptop	Cellular coverage at facility	Employees and customers are able to access data anywhere. Allows for strong BYOD policy
ZigBee	Sensor, Building Controls, Lighting	Mesh networks to control building automation and devices	Allows for growing network and retro-fit solutions
NFC	Locks, Doors, Payment Systems	Allows devices to control access – no longer just a card	Fewer security/safety concerns due to lost cards
Bluetooth	Cable Replacement	Allows devices to drive numerous external peripherals	Additional connectivity without cords

## WHY IS IT IMPORTANT?

There is an explosion of usage of wireless within your facility and you need to plan appropriately for this evolution. Everyone carries at least one device that uses wireless and many carry multiple devices (smart phone, tablet, connected watch, camera, etc.) The growth in data traffic shown in the charts will only continue in the coming years. These statistics confirm that it will continue to be driven by smart phones and tablets. Technology will drive your facility to use other wireless standards, such as, ZigBee, NFC and Bluetooth. Your facility needs to have a plan to deal with expanding wireless data needs whether driven by cellular data or Wi-Fi.

## WHY ANIXTER?

- Our staff of experienced wireless experts can help guide you through the deployment process.
- With a technical sales force and experts in our Technology Support Services team we are devoted to cabling and security solutions.
- The broadest infrastructure offerings to fit your current and future industrial communication and control, network cabling, security application, data center and enterprise cabling needs.
- Our footprint supports our customers' and suppliers' operations around the globe.



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**Anixter Inc. World Headquarters**  
2301 Patriot Boulevard  
Glenview, Illinois 60026  
224.521.8000

1.800.ANIXTER | [anixter.com](http://anixter.com)



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