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## **Wireless Networking Remains a Strong IC Market Driver**

*Wireless network standards such as Wi-Fi, Bluetooth, ZigBee, and Z-Wave continue to create a dynamic market segment.*

The 2014 edition of IC Insights' *IC Market Drivers* report will be released in November and wireless networking is one of the key topics included in the new report.

Wireless networking is now a standard capability in many electronic systems (e.g., laptop and desktop PCs, tablets, smartphones, residential gateways, etc.). Built-in wireless networking capability can also be found in many other electronic products such as printers, digital cameras, portable media players, e-book readers, video game consoles, speakers and entertainment systems, and televisions. High-end automobiles have included wireless networking for several years, but that feature continues to migrate down into the mainstream vehicle realm.

With the growing movement to conserve and monitor energy consumption, smart appliances with wireless networking capabilities are emerging. In addition, cellular service providers are increasing their use of wireless networks to offload data traffic from their strained cellular networks. The application space for wireless network technologies is vast and continues to expand.

As an example, a unit shipment forecast for Wi-Fi (802.11)-enabled systems and products is provided in Figure 1. From a unit perspective, the Wi-Fi industry blew through the 2008-2009 recession as though it never existed. Demand for traditional Wi-Fi products (e.g., routers, switches, access points) slowed up some during the recession, but that drop in demand was made up more than enough by newer Wi-Fi applications such as smartphones and tablet computers.

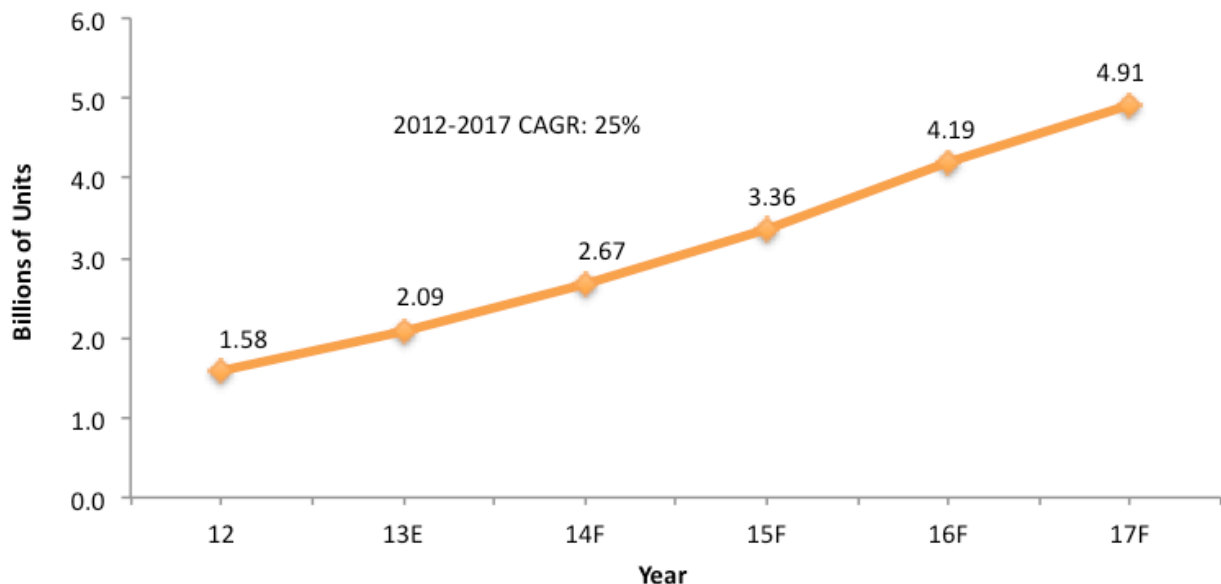
Unit shipments of Wi-Fi-enabled equipment surged 54% in 2010, followed by 46% in 2011 and another 36% in 2012. For 2013, IC Insights estimates that Wi-Fi-enabled system growth climbed 32% to 2.1 billion units, another very good year for this market segment. From 2012 to 2017, the average annual growth rate for Wi-Fi products is forecast to be a strong 25%. Cumulative Wi-Fi-enabled equipment unit shipments are forecast to reach the 10 billion mark in 2014, six years after achieving one billion cumulative units. Note that the equipment in the unit counts includes APs, NICs, routers, switches, and

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other Wi-Fi infrastructure products, as well as systems with built-in Wi-Fi functionality such as laptop PCs, tablet computers, smartphones, broadband gateways, video game consoles, 3G/4G small cell devices, etc.

### Wi-Fi-Enabled Equipment\* Unit Shipment Forecast



\*Includes APs, NICs, routers, switches, and other Wi-Fi infrastructure equipment, as well as systems with built-in Wi-Fi functionality such as notebook PCs, tablets, smartphones, and TV gateways.

Source: IC Insights

Figure 1

While 802.11n has been the most successful version of Wi-Fi yet, expectations for the next-generation standard—802.11ac—have been set even higher. The extraordinary growth in the number of mobile wireless devices and the data-intensive applications they run has created high demand for wireless connectivity with much greater bandwidth, speed, range, reliability, security, etc. In order to provide reliable, uninterrupted service for a growing amount of bandwidth-intensive applications such as HD video, an exploding quantity of Wi-Fi devices are being used, and for new Wi-Fi applications such as wireless displays and indoor positioning, the new 802.11ac wireless standard is emerging from development labs.

Even though the 802.11ac standard is not expected to be finalized until early 2014, IC manufacturers started shipping “pre-ac” devices in mid-2012 and system products (routers, access points, laptops, smartphones, etc.) started appearing on the market soon after. The Wi-Fi Alliance, which is the organization that certifies whether or not products comply with the 802.11 standards, has split the 802.11ac specification into two certification phases called Wave 1 and Wave 2. Unlike 802.11n, which is available in both the 2.4GHz and 5GHz bands, 802.11ac uses only the 5GHz band (the IEEE describes it as the <6GHz band). The new standard, which is sometimes called “5G Wi-Fi” because it is the fifth

generation of Wi-Fi, incorporates many techniques that greatly increase both the data rate and wireless range.

Figure 2 lists the major features provided by 802.11ac as compared to prior 802.11 standards. While most discussions pertaining to .11ac focus on its speed, another important improvement is that the technology can be as much as 5x more energy-efficient than .11n because it can transfer a given amount of data in much less time, thereby saving on battery life.

### 802.11ac Major Feature Enhancements

802.11ac Features	User Benefits
Wider Channels	Higher data rates – up to 1.3Gb/s per radio
Higher Encoding Density	Higher bit density per packet
Increased Number of Spatial Streams	Higher data rates per AP/client link
Beamforming	Greater wireless AP/client link reliability
Multi-user MIMO	Greater AP/client capacity and efficient use of spectrum

Source: Meru Networks

Figure 2

#### Report Details: *IC Market Drivers 2014*

*IC Market Drivers 2014—A Study of Emerging and Major End-Use Applications Fueling Demand for Integrated Circuits* examines the largest, existing system opportunities for ICs and evaluates the potential for new applications that are expected to help fuel the market for ICs.

*IC Market Drivers* is divided into two parts. Part 1 provides a detailed forecast of the IC industry by system type, by region, and by IC product type through 2017. In Part 2, the *IC Market Drivers* report examines and evaluates key existing and emerging end-use applications that will support and propel the IC industry through 2017. Some of these applications include automotive, smartphones, personal/mobile computing (including tablets), servers and cloud computing, wireless networks, medical/health electronics, and a review of many applications to watch—those that may potentially provide significant opportunity for IC suppliers later this decade like the Internet of Things (IoT). The *IC Market Drivers 2014* report is priced at \$3,290 for an individual-user license and \$6,390 for a multi-user corporate license. **It is set for release in November 2013.**

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IC Insights, Inc., based in Scottsdale, Arizona USA, is dedicated to providing high-quality, cost-effective market research for the semiconductor industry. Founded in 1997, IC Insights offers coverage of global economic trends, the semiconductor market forecast, capital spending and fab capacity trends, product market details, and technology trends, as well as complete IC company profiles and evaluations of end-use applications driving demand for ICs.

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