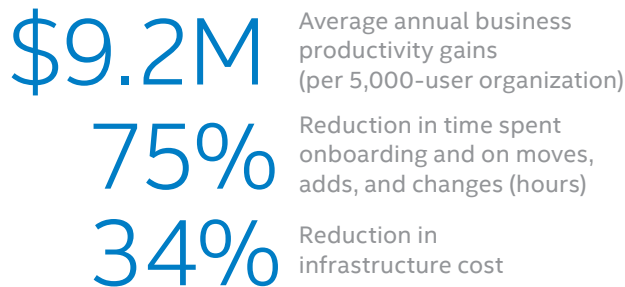




# Wired vs. Wireless—Your Next Office Network Solution

Take advantage of your office remodel or relocation to consider the speed, reliability, security, and savings of a wireless workplace

## Adding Up the Benefits



**Figure 1.** Switching to a wireless network saves on capital expenditures while it pumps up productivity.<sup>1</sup>

## Industry Strategic Challenges

**Controlling costs is a competitive imperative**, and the process can lead to challenging, even painful, business decisions. But among your options for saving money, you may have overlooked one budget-friendly alternative—making the move to an all-wireless workplace. And the best time to change from wired to wireless is when you're remodeling or relocating your office, or upgrading your existing network.

When your office is in transition, the process of converting from a traditional wired network to a wireless network becomes seamless, sparing you the need to switch end-users away from their desktops. By selecting desktop computers with built-in wireless, employees can keep the performance they've come to expect—and at a lower cost than if you converted to laptops. Consequently, you're set to cut the cord and cut the costs of a wired network.

To begin with, you're saving on installation costs and onboarding times you would otherwise incur with a wired network during a remodel or move. Next, you gain the recurring savings of a wireless office, including the simplicity of connecting and supporting new users, and the ease of adopting the innovations in wireless technology that are bound to emerge. Without even changing your fundamental PC hardware, you have a network that's poised for the future.

## Business Drivers and Desired Outcomes

Beyond the broader productivity advantages that come from introducing mobility to your workforce, you'll find that installing and maintaining a unified wireless network is much less labor-intensive, making your IT team more productive as well.

Results from industry research bring the cost savings from a wireless network into sharper focus. Today, we see existing wireless workplaces are experiencing **measurable improvements over the cost of wired networks**.

- Utilizing wireless access points to cover the office can save you up to a third of the expense of connecting physical cables to each workstation during installation.<sup>1</sup>
- All-wireless networks require less labor, reducing per-user IT staff costs by nearly a third over the life of an office.<sup>1</sup>
- With all factors considered, total cost savings for installing and supporting a wireless network in an office can approach 80 percent when compared to the cost of installing and supporting a physical wired network, when amortized across an entire office.<sup>2</sup>

Based on testing by Aruba Networks, seven organizations that rightsized their wired networks to go all-wireless reported substantial savings. The seven—ACTS Retirement Life Communities, American Fidelity Assurance, Brandeis University, California State University, KPMG, NCC Construction Sweden, and West Chester University—reported savings that ranged from \$340,000 to \$30 million.<sup>3</sup>

In our own study, Intel's IT department found that our transition from wired to wireless offices yielded hardware savings of nearly 80 percent, tracking closely with these industry results.<sup>4</sup> And you get additional savings potential from the integration of services such as voice technology.

## A Matter of Time Savings

	Traditional	All Wireless	Wireless Advantage
Time spent keeping the lights on (%)	53%	29%	45%
Mean time to deploy new services (weeks)	3 weeks	2 weeks	21%
Time spent onboarding and on moves, adds, and changes (hours)	6 hours	2 hours	75%

**Figure 2.** Compared to a traditional physical setup, a wireless network is far less labor-intensive.<sup>1</sup>

## Boosting the Budget

Annual Infrastructure Cost Per User (\$)	Traditional	All Wireless	Wireless Advantage
Hardware	\$110	\$74	33%
Software	\$48	\$24	50%
Facilities and bandwidth	\$33	\$29	13%
Power	\$7	\$4	43%

**Figure 3.** In a study of wireless network adopters, IDC found significant economic savings in annual infrastructure costs per user compared to the cost of wired networks.<sup>1</sup>

## Digital Transformation and Business Innovation

Rest assured that today's wireless networks have eclipsed the unreliable and insecure novelty offered by cafés and coffee houses to smartphone users. With improvements in Wi-Fi technology, **wireless connections pack the dependability, security, and speed it takes for your employees to meet all the expectations you've set for them.** As a case in point, Intel® Wireless-AC 2x2 delivers data at nearly six times faster than the prior-generation 802.11n Wi-Fi standard.<sup>5</sup> The future of Wi-Fi brings improvements to throughput, increased network efficiencies, and better support in dense environments, to name a few. These improvements begin rolling out with 802.11ac R2<sup>6</sup> within the next year and the next generation of Wi-Fi with 802.11ax in 2018, enabling >1Gbps throughput performance<sup>7</sup>. And when you integrate Intel® vPro™ technology into a PC's own hardware, you add checkpoints and controls to reinforce protection of your data and communications. While the movement to mobility represents a considerable opportunity to advance workforce productivity, wireless rewards are not one-dimensional. Desktop PCs are entirely compatible with modern wireless networks, and **by making an incremental investment today in desktops with integrated wireless, you're setting yourself up for healthy dividends down the road.**

For example, testing shows a desktop equipped with an integrated Intel® Wireless-AC 2x2 solution can upload/download data an average of nearly 1.8 times faster than that of a 2x2AC external wireless adapter. And integrated Wi-Fi solutions offer savings of roughly 30 percent over the cost of external wireless solutions.<sup>8</sup> In limited instances where heavy I/O desktop users are looking to maintain an Ethernet connection, it would be worthwhile to test their application first in the wireless environment to determine if the wireless network can meet their performance needs. Even if a small percentage of Ethernet connections need to be maintained in the network, the overall savings in a wireless network for the remaining users is still highly beneficial. Also, having wireless-capable desktop systems ensure users can take advantage of the other wireless benefits available now and in the future.

In terms of system performance, desktops continue to provide you with a greater bang for your buck. They are generally easier to repair, upgrade, and customize than most laptops on the market. When combined with the cost benefits of a wireless network, you can see that your desktops remain a relevant and important instrument for your modern workplace.

## Enabling Transformation

**By embracing a wireless network, you're embracing the promise of innovation.** Wireless technology, including wireless cards and hardware, is constantly marching forward—becoming faster, cheaper, and more widespread. The next generation of LAN cables? They'll be servicing data centers, not offices.

Recognize that as costs diminish for wireless infrastructure, you'll be able to refresh your network system more frequently at a smaller expense. Consequently, you're saving money as you stay in step with advancing technology. And for all the existing features you can find in a wireless network, new capabilities are always around the corner.

With advancements such as the Intel® Authenticate Solution, you can lock and unlock a PC automatically based on proximity to an approved smartphone via Bluetooth+ low energy (BLE)<sup>9</sup>. Or consider the Wi-Fi Alliance's certified Miracast\* functionality—described as “HDMI over Wi-Fi”—for freeing PCs from the hassle and clutter of cables, ports, and adapters. These examples mark just the beginning of the next generation of features and applications focused on elevating what's possible with the PC experience. And they will come to life over Wi-Fi.

## Solution Summary

In one strategic step you gain the immediate cost benefits of installing and supporting a wireless network today while future-proofing your business to take advantage of ongoing innovations in wireless technology. If an office remodel, move or network upgrade is on your radar, make a clean break and gain a clear edge over a physical wired network. With a wireless network, you're adopting the optimal solution for servicing both laptops and desktop clients on the same infrastructure.

## Intel Technology Foundation

Intel® Wireless Technology, Intel® Wireless-AC, and Intel® Core™ vPro™ processor family.



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<sup>1</sup> Greene, N., & Perry, R. (2014, October). The Tipping Point Is Here — All-Wireless Workplaces Show Benefit over Traditional Wired Technology. IDC, 1-11. Retrieved from [http://www.arubanetworks.com/pdf/09262104\\_IDC\\_Tipping\\_Point.pdf](http://www.arubanetworks.com/pdf/09262104_IDC_Tipping_Point.pdf)

<sup>2</sup> Phifer, L. (2010, January). Wireless or Ethernet LAN? An apples-to-apples cost comparison. Techtarget.com, 1-4. Retrieved from <http://searchnetworking.techtarget.com/tp/Wireless-or-Ethernet-LAN-An-apples-to-apples-cost-comparison>

<sup>3</sup> Aruba Networks Executive Brief. “The all-wireless workplace is defined by mobility” [http://www.arubanetworks.com/assets/eo/EB\\_Rightsizing.pdf](http://www.arubanetworks.com/assets/eo/EB_Rightsizing.pdf)

<sup>4</sup> Intel data based on estimated industry average costs and will vary by enterprise/business deployment. Cost per user comparison includes hardware and Ethernet cabling costs. Additional opportunities via wireless voice include the replacement of desk phone and headset hardware with a softphone headset.

<sup>5</sup> Nearly 3x/6x faster Intel® Wireless-AC claims are based on the comparison of maximum theoretical data rates for single (433 Mbps) and dual (867 Mbps) spatial stream 802.11ac vs. single spatial stream (150 Mbps) 802.11n Wi-Fi solutions as documented in IEEE 802.11 wireless standard specifications, and require the use of similarly configured 802.11ac wireless network routers or better.

<sup>6</sup> Wi-Fi Alliance. “Wi-Fi Certified™ ac brings new advances in Wi-Fi® performance.” <http://www.wi-fi.org/news-events/newsroom/wi-fi-certified-ac-brings-new-advances-in-wi-fi-performance>. 29 June 2016. Web

<sup>7</sup> IEEE Computer Society. “IEEE Standard for Information technology-Telecommunications and information exchange between systems-local and metropolitan area networks-specific requirements. Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications—Amendment 4: Enhancements for Very High Throughput for Operations in Bands below 6 GHz.” IEEE Std 802.11ac™. 11 Dec. 2013. Print

<sup>8</sup> NLOS testing 11ac/80–5GHz. Intel Wireless AC modules (3165, 8265) integrated into HP Envy 750 with Intel® Core™ i7, driver: 19.0PV-STHWF0203, Win 10 64-bit (TH2), Netgear R800 access point. Rx/TX average speeds at each distance. Pricing based on HP Envy 750 (\$25 for Intel® 1x1ac) and Lenovo ThinkCentre M800 (Intel® 3165AC \$25; Intel® 8260AC \$35) desktop system online configurable option adds. Netgear external dongle pricing from Amazon.com: Netgear AC6210 2x2 \$54.12; Netgear AC6100 \$39.33 on 5/4/2016

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