

Large Companies Plan Gigabit Rollouts

The gigabit race is heating up. After Google Fiber and others demonstrated the allure of 1 Gbps Internet access and the capacity to provide such service on a large scale, large U.S. providers are developing plans to roll out similar services.

By Masha Zager / *Broadband Communities*

Nearly four years ago, Chattanooga became the “Gig City” when its municipal broadband company introduced 1 Gbps Internet service, and young entrepreneurs flocked to the city. The following year, Google selected Kansas City, Kan. – and, ultimately, the whole Kansas City metropolitan area – as the site of its first gigabit fiber network, and young entrepreneurs began to move there, too.

Other communities took note. Many whose municipal utilities, like Chattanooga’s, operated FTTH networks upped their Internet speeds to gigabit levels. Cities that did not have municipal utilities or were otherwise constrained from building their own fiber networks started to issue RFPs for gigabit services, either individually or as part of the multicity Gig.U initiative. They also began to look at ways to reduce fiber deployment costs by making municipal assets more readily available, streamlining processes and eliminating unnecessary regulations.

Incumbent providers also took note, not only of the threat of competitive overbuilds (Google isn’t the only overbuilder, though it may be the only one whose scale can rival the major incumbents) but also of consumer demand for ultra-broadband services and cities’ cooperative stance. In addition, they saw that the economics of residential fiber deployment had changed over the last few years.

Incumbent telephone and cable companies have built out thousands of miles of fiber to serve enterprises and cell towers, and some of that fiber is well positioned to serve residential neighborhoods. As well, new techniques, such as microtrenching, have made fiber deployment less expensive in densely populated areas.

THE RACE IS ON

With the Kansas City build underway, Google announced a new gigabit fiber build in Austin, Texas; it also bought and began to enhance the existing FTTH network in Provo, Utah. Shortly afterward, two Tier 1 telephone companies launched their first salvos. CenturyLink introduced residential gigabit services in parts of Omaha, Neb., and Las Vegas, and AT&T unveiled its U-verse with GigaPower service in Austin. GigaPower currently provides 300 Mbps service but is scheduled to upgrade this year to symmetrical 1 Gbps.

The major cable providers, in turn, began increasing their maximum download speeds to 300 Mbps or 500 Mbps in selected markets. (Those offerings, which would have been remarkable only a few years ago, are not even included in this roundup.)

The gigabit wars intensified in spring 2014 when, within a short time, Google announced plans to negotiate gigabit rollouts in nine metropolitan areas, AT&T announced similar plans for 25 metropolitan areas, and

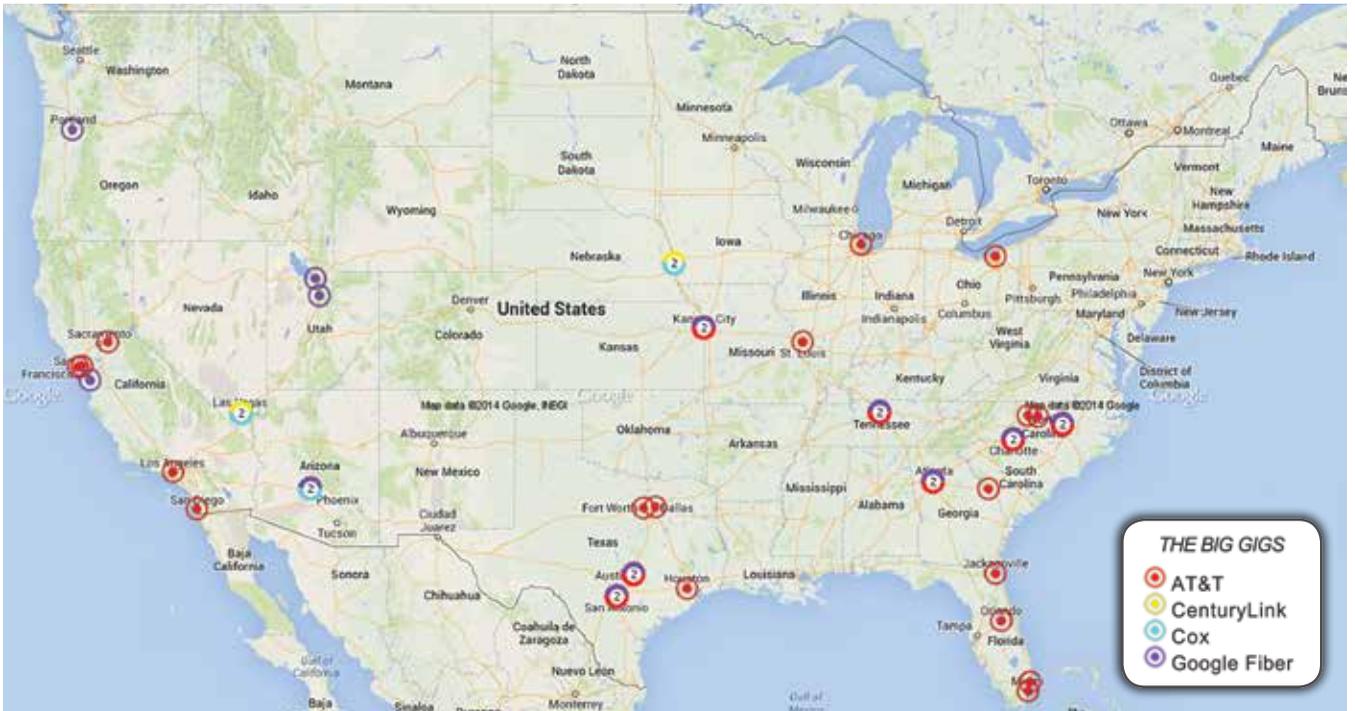


TABLE 1: POTENTIAL GIGABIT COMMUNITIES – GOOGLE FIBER AND LARGE INCUMBENTS

METRO AREA	ISSUED RFI/RFP	SERVICE PROVIDER	STATUS
Atlanta		Google Fiber	Planned
		AT&T	Planned
Augusta, GA		AT&T	Planned
Austin		Google Fiber	Live/in progress
		AT&T	Live/in progress
Charlotte		Google Fiber	Planned
		AT&T	Planned
Chicago	✓	AT&T	Planned
Cleveland		AT&T	Planned
Dallas		AT&T	Planned
Fort Lauderdale		AT&T	Planned
Fort Worth		AT&T	Planned
Greensboro		AT&T	Planned
Houston		AT&T	Planned
Jacksonville		AT&T	Planned
Kansas City		Google Fiber	Live/in progress
		AT&T	Planned
Las Vegas		CenturyLink	Live/in progress
		Cox	Live/in progress
Los Angeles	✓	AT&T	Planned
Miami		AT&T	Planned

METRO AREA	ISSUED RFI/RFP	SERVICE PROVIDER	STATUS
Nashville		Google Fiber	Planned
		AT&T	Planned
Oakland		AT&T	Planned
Omaha		CenturyLink	Live/in progress
		Cox	Live/in progress
Orlando		AT&T	Planned
Phoenix		Google Fiber	Planned
		Cox	Live/in progress
Portland, OR		Google Fiber	Planned
Provo		Google Fiber	Live/in progress
Raleigh-Durham	✓	Google Fiber	Planned
		AT&T	Live/in progress
Salt Lake City		Google Fiber	Planned
San Antonio		Google Fiber	Planned
		AT&T	Planned
San Diego		AT&T	Planned
San Francisco		AT&T	Planned
San Jose		Google Fiber	Planned
		AT&T	Planned
St. Louis		AT&T	Planned
Winston-Salem	✓	AT&T	Live/in progress

cable provider Cox Communications announced that it would soon offer gigabit speeds in three metropolitan areas and begin deployment of gigabit speeds to its entire residential footprint by the end of 2016.

Recently, AT&T filed comments with the Securities and Exchange Commission, saying that, if its acquisition of DIRECTV is approved, it would have a business case to upgrade 2 million locations to high-speed broadband with GigaPower within four years. (Whether the 2 million locations are in the 25 metropolitan areas already announced is not clear.)

Table 1 and the accompanying map show the state of play as this magazine went to press.

NOT ALL GIGABITS ARE EQUAL

Google Fiber, AT&T and CenturyLink are all delivering symmetrical gigabit speeds using similar fiber-to-the-home technology, primarily GPON. In some multifamily housing, the condition of the in-building wiring allows deployers to deliver symmetrical gigabit speeds without running fiber to every unit, and all three providers are likely to use fiber-to-the-floor-plus-Ethernet technology in such buildings.

AT&T, it's true, promises only speeds "approaching" a gigabit, saying, "Actual speeds vary based on factors including site traffic, content provider server capacity, internal network factors and device capabilities, and use of other U-verse services," but this language seems to reflect legal caution rather than a difference in technology.

Cox, on the other hand, may well be using a different technology or set of technologies from the other three companies. It would not reveal what upload speeds it planned for its gigabit service, and, in answer to a question about the technology used, the company told Broadband Communities, "We're not sharing deployment details at this time."

NOT ALL BUILDS ARE COMMUNITYWIDE

At present, none of these four deployers is building truly communitywide

networks. Google operates on a build-to-demand principle and does not wire neighborhoods without a minimum number of preregistrations. Some low-income neighborhoods fail to meet the minimums; to avoid widening the digital divide, local governments in Google Fiber cities are working with nonprofits to sign up residents in those neighborhoods. In affluent neighborhoods, competing ultra-broadband services may depress sign-up rates below the minimum. (Austin, for example, will have three gigabit providers and at least one 300 Mbps provider.)

However, Google is closest to meeting the goal of communitywide services. It launched the Fiber project specifically to find out what "gigabit communities" could achieve, it publishes information about its construction progress and plans, and it appears to be building out its target communities as fully as possible.

Cox also plans eventual "marketwide" deployments, though its timetable for this is uncertain. Its initial deployments will start with "new residential construction projects and new and existing neighborhoods" in the target cities.

AT&T and CenturyLink, by contrast, are working to identify cities and neighborhoods with strong demands for advanced services (on the basis of prior experience rather than preregistration) but would not reveal what proportion of each target city will eventually have access to gigabit services. Assuming these companies would want to publicize large-scale gigabit builds, it seems likely that their deployments will be much less than communitywide.

WHERE IS THE FINANCING COMING FROM?

Google has about \$60 billion in cash on hand – enough to finance the Fiber project out of its back pocket – but the three incumbents must answer to investors historically skittish about financing wireline networks. CenturyLink and Cox, understandably, are beginning with a few pilot projects that can serve as proofs of concept without requiring large amounts of

funds. In fact, CenturyLink's first gigabit deployment, in Omaha, overbuilt obsolete plant that would have had to be replaced with *something*.

In the near future, AT&T's gigabit deployment seems potentially much larger than Cox's and CenturyLink's, especially if the statement in the SEC comment about the 2 million locations is to be taken seriously. However, the company says its expanded fiber build is not expected to impact its capital investment plans for 2014, which remain unchanged at \$21 billion, and declined to say whether it impacts future investment plans. So where is the money coming from?

Dahna Hull, AT&T vice president for GigaPower, explained to Broadband Communities, "We've explored the idea of gigabit Internet for some time and have made plans accordingly. AT&T U-verse with GigaPower is part of our VIP investment plan to expand services. It makes sense to move forward now since the economics of fiber allow us to deploy this capability without impacting our 2014 capital investment plans. Building on the existing capabilities of our network, the cost to deploy fiber is less with advances in civil construction, power and project management. Municipal policies that lower our cost of permitting, energy and construction practices play a significant role in our deployment decisions. Additionally, the ability to build where there is high customer demand for the service is critical to opening new fiber deployment opportunities."

AT&T's original U-verse deployment gave it a head start on GigaPower. Though U-verse is primarily an FTTH network, it includes a substantial amount of FTTH (though AT&T has never revealed exactly how much), which could be upgraded to gigabit speeds simply by replacing the customer-premises equipment. In other locations, fiber is close enough to homes to be extended the rest of the way with little extra expense. Hull confirmed to Broadband Communities that one criterion for selecting cities and neighborhoods for GigaPower, in



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addition to anticipated demand, is the existence of “suitable infrastructure.”

In summary, AT&T appears to have spent the last several years positioning itself to launch advanced services quickly when the competitive situation warranted – and doing it quietly enough to avoid alarming Wall Street or tipping off potential competitors.

WHO'S GETTING A GIG?

How are these operators selecting communities in which to build gigabit networks? Of course, existing infrastructure is a major factor, not just for the incumbents (which are staying within their traditional footprints) but also for Google, which owns data centers and long-haul networks across the U.S. Beyond that, several other factors come into play. Among these are the following:

- **Size:** The metropolitan areas selected range from very large to midsized.

- **Economic health:** Cox explicitly named rapid growth as one of its criteria for selecting cities for gigabit deployments. In contrast to municipalities, which often deploy fiber in an effort to jump-start lagging economies, large players favor localities that are healthier to begin with.
- **Local interest:** At least four of the cities (as shown in Table 1) have issued requests for information or requests for proposals for ultra-high-speed broadband networks. Others responded to Google's RFI or otherwise indicated that they would welcome fiber deployments.
- **Competition:** Eleven of the metro areas are targets for two of the four providers shown. In addition, some have competition from other FTTH providers. For example, Salt Lake City is the home of the unfinished municipal fiber network UTOPIA,

which the Australian infrastructure firm Macquarie Capital is also proposing to complete. Dallas is the one area in which Verizon offers FiOS services outside its ILEC footprint. Sonic.net has been trying to build a gigabit network in San Francisco, and Cleveland has some gigabit pilot projects associated with One Community. Major cable providers are also providing very-high-speed (though not gigabit) networks in many of these areas.

Economists often refer to FTTH as a natural monopoly because no area can support more than one such network. Until now, almost no FTTH networks have been overbuilt. The only U.S. city with multiple FTTH systems, to our knowledge, is Monticello, Minn., and the municipal system there has struggled financially. (The other FTTH system in Monticello is operated by a large carrier and may be cross-subsidized by its other markets.)

Has the era of natural monopoly ended? It will be interesting to see what happens in the cities where multiple FTTH networks are planned. Several outcomes other than a fight to the death are possible. Most efficient – and least likely – is for the competitors to build FTTH infrastructure as a joint venture and offer competing services over the same pipes. More probably, the competitors will race to build out different neighborhoods, and there will be little overlap among their networks except, perhaps, in a few high-income, tech-savvy neighborhoods.

A third possibility is that the competitors will build overlapping networks yet sell enough advanced services – the sort of exciting gigabit services that US Ignite is helping to develop – to operate their networks profitably. If multiple FTTH networks can coexist and thrive, telecommunications will really have entered a new era. ❖

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