Even as it forges ahead on preparations for the rollout of a nationwide 5G network in 2020, AT&T is planning interim speed boosts for rural customers, fiber Internet subscribers, and residents of Austin and Indianapolis that will go live in the next few months.

At an event in San Francisco today, AT&T executives offered a look at the behind-the-scenes changes to its network that will help make the speed boosts possible. Chief among them are 8.5 million lines of code that let the company's engineers more closely monitor data traffic to detect problems and deal with the explosive growth of streaming video, which makes up the bulk of the 250,000 percent overall increase in AT&T customers' data consumption over the past 10 years.

Known as software-defined networking, the open-source code enables engineers to treat the AT&T network as if it were a giant data center, remotely changing server configurations to optimize data flows without having to send technicians out into the field with trucks and ladders. Thirty-four percent of the network can be managed this way today, and the company plans to have it manage 75 percent by 2020.

The network overhaul will be coupled with new hardware to bring fiber-like speeds to hard-to-reach customers, like condo complexes and rural areas. Some rural customers in the Midwest and the South will get antennas bolted to the sides of their houses that can pick up a signal from the nearest AT&T fiber access point, an evolution of the residential LTE broadband service that Verizon began testing back in 2011. AT&T says that more than 400,000 customers will be connected via this method by the end of the year.

Condo owners, meanwhile, will get G.fast, a high-speed version of DSL that can reach 1Gbps on very short copper local loops. Both G.fast and the rural antennas promise speeds

equivalent to those delivered over fiber-optic cables, but without the construction challenges that make it cost prohibitive to lay new fiber to a condo building, farm, or ranch.

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As for 5G itself, AT&T began testing the next-gen wireless data network last year, and plans to conduct field trials in Austin and Indianapolis over the next few months. Assuming they have a compatible device, Austinites and Indianapolitans will see peak speeds of up to 400Mbps, while isolated areas could reach 1Gpbs by the end of the year. AT&T didn't announce which phones or other devices are compatible.

By 2020, AT&T's AirGig antennas (pictured above) will supplement the home antennas and G.fast in order to bring fiber and 5G signals directly to the home, with no additional hardware required. PowerGig models are huge, and designed to sit atop telephone poles. In addition to delivering signals to the home, they'll also communicate with self-driving cars and other Internet of Things devices. The end result should be noticeably faster data access pretty much anywhere AT&T provides wireless or wired Internet service.

"Our goal is to bring really fast Internet to our customers, whatever the technology is," said Eric Boyer, AT&T's senior vice president for wired and wireless product marketing.