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TECHNOLOGY

Gearing Up for the Cloud, AT&T Tells Its Workers: Adapt, or Else

By **QUENTIN HARDY** FEB. 13, 2016

DALLAS — Thirty-four years ago, Kevin Stephenson got his younger brother, Randall, a job with the telephone company.

Kevin, then 23, and Randall, 22, had tried selling cattle feed with their father near their home in Moore, Okla., but that didn't pan out. Kevin was hired to do accounting at a local Southwestern Bell office. Randall, who was in college, needed a bit more help. "He had trouble getting hired," Kevin said. "I talked to someone I knew in personnel."

The brothers had different tastes. Kevin liked to be outside, and now, at 57 years old, he works in Norman, Okla., fixing the decades-old copper lines that still connect to landline telephones in most homes as well as to modern Internet conduits like high-speed fiber optics. Randall liked numbers and stayed indoors, rising through the management ranks.

Southwestern Bell became SBC Communications and took on the old AT&T name through an acquisition in 2005. By 2007, Randall was running the place.

Today, Randall Stephenson, AT&T's chairman and chief executive, is trying to reinvent the company so it can compete more deftly. Not that long

ago it had to fight for business with other phone companies and cellular carriers. Then the Internet and cloud computing came along, and AT&T found itself in a tussle with a whole bunch of companies.

AT&T's competitors are not just Verizon and Sprint, but also tech giants like Amazon and Google. For the company to survive in this environment, Mr. Stephenson needs to retrain its 280,000 employees so they can improve their coding skills, or learn them, and make quick business decisions based on a fire hose of data coming into the company.

In an ambitious corporate education program that started about two years ago, he is offering to pay for classes (at least some of them) to help employees modernize their skills. But there's a catch: They have to take these classes on their own time and sometimes pay for them with their own money.

To Mr. Stephenson, it should be an easy choice for most workers: Learn new skills or find your career choices are very limited.

"There is a need to retool yourself, and you should not expect to stop," he said in a recent interview at AT&T's Dallas headquarters. People who do not spend five to 10 hours a week in online learning, he added, "will obsolete themselves with the technology."

Kevin? He admires his younger brother, but he is among the many AT&T lifers who are not that keen to participate in this reinvention of old Ma Bell. "I'm riding the copper train all the way down," he said.

He talks about the changes with obvious affection for both his brother and his longtime employer. In interviews, many veteran AT&T employees around the country showed a surprising amount of emotion toward a company that has been broken up, rebuilt and reinvented several times.

But that doesn't mean everyone is particularly eager to rebuild and reinvent themselves for a new AT&T. Even if it means, as Randall put it,

obsolescence.

Companies' reinventing themselves to compete with more nimble competitors is hardly a new story. Many have tried, and a handful have even succeeded. Mr. Stephenson wants AT&T to be among those few.

In the last three years, he has spent more than $20 billion annually, primarily on building the digital business. DirecTV was acquired in a $63 billion deal last year, and several billion more was spent to buy wireless businesses in Mexico and the United States. Even for a company with $147 billion in 2015 revenue and over $400 billion in assets built up over more than a century, it's a lot.

By 2020, Mr. Stephenson hopes AT&T will be well into its transformation into a computing company that manages all sorts of digital things: phones, satellite television and huge volumes of data, all sorted through software managed in the cloud.

That can't happen unless at least some of his work force is retrained to deal with the technology. It's not a young group: The average tenure at AT&T is 12 years, or 22 years if you don't count the people working in call centers. And many employees don't have experience writing open-source software or casually analyzing terabytes of customer data.

If you don't develop the new skills, you won't be fired — at least AT&T won't say as much — but you won't have much of a future. The company isn't too worried about people leaving, since executives estimate that eventually AT&T could get by with one-third fewer workers.

Mr. Stephenson declined to project how many workers he might have by 2020, when the cloud-based system is supposed to be fully in place. One thing about cutting people in an aging work force, he noted, is that "demography is on our side." Other senior executives say shrinking the work force by 30 percent is not out of the question.

Maybe so, but count Kevin among the skeptics of how fast AT&T's transformation will happen.

"I'm proud of my brother," he said, "but he's not going to get rid of this stuff as fast as he thinks."

Eyes on the Cloud

Long ago, a phone system created wire lines between callers, and operators moved plugs in their switchboards to connect people. Over time, that was automated to become something closer to a computer, with digital fibers and wireless towers. Much of the setup, however, still needed lots of people to tend hardware that had been built for particular tasks, like feeding one neighborhood's calls into a nationwide backbone of wires, fiber and switches.

Mr. Stephenson has concentrated on things related to cloud computing, a technology setup that is more like the computer guts of Google or Amazon than the circuits and switches of a phone company. This cloud system will eventually touch ventures in landline phones, wireless, high-speed online services, cable TV and now satellite, thanks to the DirecTV purchase.

Analysts give him good marks but say he has a long way to go. "They want to be 75 percent done by 2020, and last year they did the first 5 percent," said Akshay Sharma, an analyst with the research firm Gartner.

Google and Amazon are increasingly in businesses that look like what AT&T does, and they thrive on analyzing the data they gather about customers. Google, for example, is offering high-speed Internet access in some cities. Amazon is selling video entertainment, as well as hosting new kinds of phone systems in its cloud.

AT&T wants to build products and services as fast as this competition. Data from satellite TV could be analyzed for viewing habits and someday used,

for example, to sell football fans a replay app for their AT&T mobile phones.

In 2012, Mr. Stephenson realized, much to his dismay, that his staff was woefully unschooled for the new technology. Vision 2020, as the company calls it, is a program that combines online and classroom-based course work in subjects like digital networking and data science, as well as a look at old skills that can be transferred to new careers.

Everything at AT&T is changing, from the services customers are offered to the way they are charged for them. One service called Network on Demand, for example, allows customers to increase the size of their Internet pipes without calling a technician, something that used to take weeks. And Mr. Stephenson's employees have to be able to deal with all that.

"If we can't do it, mark my words, in three years we'll be managing decline," he said.

A possible answer showed up on a sweltering Dallas afternoon in 2012 when Sebastian Thrun arrived. Mr. Thrun, a Silicon Valley technologist and onetime Stanford professor, is known for his futuristic work on self-driving cars and Internet-based learning. He is also the founder of Udacity, an online education company.

Inside a glass-walled office where Mr. Stephenson meets presidential candidates and corporate titans, Mr. Thrun gave him a pitch on funding an online master's degree in engineering that Udacity proposed to teach in conjunction with the Georgia Institute of Technology. Within five minutes, the two men were cross-legged on the floor, Mr. Stephenson eager to try a physics course.

His first online learning began with an unexpected challenge: getting online. AT&T's own Wi-Fi was too clunky, Mr. Thrun recalled. Eventually they used Mr. Thrun's smartphone, which ran on the network of T-Mobile, a rival carrier.

The building's Wi-Fi is now said to be better, and elsewhere in AT&T the first employees are getting their online Georgia Tech degrees.

Eboni Bell, 24, a product manager for smartphone software in AT&T's Atlanta office, sees the Vision 2020 retraining as the chance of a lifetime. The company provided tuition assistance for much of her two-year Udacity/Georgia Tech master's degree in computer science, which it says cost $6,600. Single and childless, she doesn't mind the hours it takes.

"I leave the office at 7 p.m., work at home until midnight, and Saturdays and Sundays are committed to school," she said.

Ms. Bell, who wants to work in software architecture and design, plans to keep taking courses. "I need to know what my competitors are doing," she said. "I can't see myself staying with one product too long — it makes me feel like I'm not growing."

So far most of the people who have taken the new courses are managers, and seem interested in learning very technical skills. Among the most popular courses are web development, data analysis, introduction to programming and writing apps for the iPhone.

"It's great for those who want to make the transition," said Mr. Sharma of Gartner. "If you don't want to change, it's a good time to retire and enjoy life."

AT&T's workers receive weekly emails and video broadcasts about learning online. Vision 2020 includes an internal website where employees can enter their job titles, see what types of careers might be available in a software-driven company, and what courses they need to take to get them. Over time, their grades are logged, and depending on how they do on the schoolwork, different new courses are suggested. Eventually, performance reviews will include data on what people studied, how well they did and whether, like Ms. Bell, they are willing to keep learning.

Eventually, the plan is that desire for learning will be taken into account when promotions are considered.

Across the country in Orange, Calif., Patti Cunningham, a 61-year-old technician, is struggling. Ms. Cunningham, who has worked at AT&T for 43 years, has not signed up for any courses, and can barely recall receiving emails about the new plans. (An AT&T spokesman produced dozens of such messages, going back to early 2014.) Essentially, she does not see a place for herself.

“This new concept of training on your own time, everything changing all the time, if you want to keep working, do more things on your own time — I guess they have to do it,” she said, sitting in a run-down room at her union local. “But I don’t see a need to be involved.”

Christopher Shelton, national head of the Communications Workers of America, said the changes were inevitable, and he believed his people would go along with them.

“We realized a long time ago that you can’t fight technology change and win,” he said. “Our contracts spell out training programs and policies to make sure that members get training to update their skills as technology changes.” Still, he thinks the expectations about home study after a hard day’s work are too much.

AT&T will reimburse up to $8,000 a year in tuition; the amount was raised just last month. The company claims that a year into the program, over half of the work force, mostly managers, has started training, sometimes with dozens of short online courses.

“People are going to have to work hard, but it’s not insane,” said William Blase, who oversees personnel for all of AT&T. “There’s going to be an expectation that your compensation will be tied to continuing to learn. We’re at a crossroads as a business — and a country — where education has to keep

up with technology."

If there is one thing on which Ms. Bell and Ms. Cunningham agree, albeit with different sentiments, it is that the change is necessary. Eventually phone calls, texts, sensor data and TV shows, along with much else, will all run on fiber-optic networks and be managed largely with software.

Ms. Bell works with a lot of older colleagues. "One of my co-workers has been looking at the same database for 20 years," she said. "It sounds harsh, but if she doesn't adapt, there won't be room for her."

That message has not been lost on Jacobie Davis, an 18-year employee in Richardson, Tex., who works in tech support for older-style gear. At 39, he is the youngest person in his office, and is scrambling to study both new networks and data science. "I try to put in 15 hours a week," he said. "By 2020, my technology will be gone."

For Some, a Tough Sell

In some ways, cloud computing is not as radical a technology shift as all the puffy language suggests. Big banks of computers still run software, as they have been doing in many industries since the 1960s. They have more power, because their chips have more transistors that enable them to do more, and they connect to more things thanks to fiber-optic cable and wireless.

The big difference is something called virtualization, which amounts to software that allows many machines to operate like one piece of computer hardware. This made it possible to run software that in effect interacted with other software instead of hardware. This, in turn, means the possibility of changing functions around rapidly by typing a few lines of code.

The new systems also collect more data, quickly analyze information about what people and things are doing, and react. That is how online ads are personalized for you, and increasingly how maps reflect current traffic

conditions, or streetlights adjust to suit parking congestion.

Now what once took a year of analysis and deployment can instead happen in days, even minutes.

These concepts can be tough in some reaches of AT&T, where lives and work have not changed all that much.

In Dayton, Ohio, Kirk Warrenburg came out of a job in a bowling alley and started wiring cards for telegraph systems 40 years ago. Now he works on AT&T's signaling network, which makes sure billions of calls get through.

He has taken 16 courses — Udacity courses and in-house "nano courses," each about two weeks long — in the last year. He doesn't see himself changing jobs, however, because the old machines still need someone to care for them. Younger workers, he thinks, won't want to be in his dead end.

"Writing a telegraph circuit was like writing a recipe for a field technician," he said. "A lot of legacy systems are still around here. I'll be long gone before they will."

Some other older employees besides Kevin Stephenson think the 2020 target will come and go, but basics won't change.

The 2020 effort "is just a start," said Kenny Williams, 64, a testing technician and the head of Ms. Cunningham's union local in Southern California. "I've inoculated my people against worrying. They need a fiber network for this that doesn't exist out here yet. Seventy percent of my folks are safe; the other 30 have to be found jobs, or they'll take the golden handshake" and retire.

As he sees it, much of the urgency comes from the threat of Google. In 2015 Google Fiber, Google's high-speed Internet service, caused AT&T to do something uncommon in its history: lower its prices because of competition. "In 40 years here I hadn't seen that," Mr. Williams said. "Their people aren't in

unions — we're a lot more on AT&T's side than theirs."

AT&T recently began rolling out fiber in about 50 cities in the United States, in what it hopes is a bigger move than Google can make. Still, putting a cloud system all the way across a diverse, continentwide network will take years, which is why Mr. Williams feels safe.

Face to Face With Google

What happens next at AT&T — and how fast that will happen — is a matter of disagreement in the Stephenson family.

"I go out to houses away from the cities, and there's not a lot of fiber there," Kevin said. Fiber would open the way for all that new technology. He takes comfort in looking at patches linemen did on fiber systems decades ago — from both the jury-rigged craftsmanship and the way they have endured.

But Randall said his brother was not necessarily like the rest of the work force because there will always be hard, outdoor tasks for people like him. "There will be people turning screws and digging trenches. I'll be long gone before that is over. But other guys I know in Oklahoma will do a skills pivot" with additional training, he said.

Besides, it's not just about his brother. It's about most of the economy.

"Everybody is going to go face to face with a Google, an Amazon, a Netflix," he said. "You compete based on data, and based on customer insights you get with their permission. If we're wrong, it won't play well for anyone here."

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