

# Next-Generation Networks and Next-Generation Skill Sets

Network employees need to understand more than just network technology. Customer-relations skills and typing ability help, too.

By Russ Sharer ■ *Occam Networks*

“It is possible to fly without motors, but not without knowledge and skill,” said Wilbur Wright, who used all three of these when he and his brother lifted off in their next-generation technology at Kitty Hawk more than 100 years ago. While technologies have changed immensely since then, the basic conditions for success or failure have not.

Today, as many telcos begin to implement next-generation networks, they spend much of their time assessing, selecting and ultimately investing in the “motors” – IP and Ethernet-aware access, switching and transport equipment.

All of these are critical elements, to be sure, but they cannot by themselves create success.

The remainder of Wright’s success equation in flight – knowledge and skill – is equally important for implementing and operating a next-generation network for telcos maneuvering to remain on the cusp of innovative service. As this new equipment takes root, managers are turning to the question of what critical skills and training are required to ensure success. Managers everywhere are rightfully asking, “What are the key skills my technical staff needs to succeed?”

In working with more than 250 telcos across the country, Occam Networks has learned that there is one key to successful skills renewal and four specific knowledge areas for next-generation success. Let’s see if your staff has what it takes to fly.

The key question for skill renewal is, “Does the employee want to learn

something new?” My experience is that the vast majority of employees do want to learn new skills, either out of intellectual curiosity or out of a desire to diversify their skill sets. The vast majority will respond favorably to any and all investment in them as employees. The chance to work with new equipment, attend new certification programs or even become the company expert on a product is seen as very positive. Human resource research has shown that the chance to learn and develop is critical to job satisfaction.

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However, when an employee does not want to learn something new, you can’t force him or her to do so. Surprising though it may seem in our industry, I’ve heard a number of people say, “I only have  $x$  years until retirement and I don’t want to learn something new.” This attitude usually has little tie to an employee’s age. In my experience, it is usually more of a mental mindset, with chronological age not being much of a factor.

When faced with this attitude, an effective approach can be to find this employee a position in your company dealing with existing or older technology. Remember the time-honored proverb, “Never try to teach a pig to dance. It just frustrates you and irritates the pig!” Work with the willing and the result will be a more successful deployment.

## SKILL ONE: KEYBOARDING

When most of us were in school, we knew this skill as typing. Regardless of

the name, it is the ability to use a computer keyboard to enter configuration information, to troubleshoot commands or to administer the system. The goal here is not a required typing skill level of 70 words a minute; instead it is something more like comfort and relative efficiency with the keyboard. Next-generation networks are driven by software, so keyboards are essential for operation. And a two-finger hunt-and-peck style will hinder the employee’s success.

Keyboarding can be learned through typing tutor software on a PC, Web-based applications or classes at the local community college. You might want to consider incorporating a typing test into your interview and

hiring process, so employees are not surprised by the requirement. Due to the popularity of Web surfing and e-mail, it has been my experience that most people have become adequately proficient at keyboarding.

## SKILL TWO: BASIC COMPUTER NETWORKING CONCEPTS

The technologies of next-generation networks will be packet-based IP and Ethernet-oriented. These are fundamentally different from the traditional circuit technologies of telephony and, therefore, not always in the knowledge base of current employees. With both control information and bearer (user) traffic carried as packets of information that are switched through the network, these technologies offer greater flexibility in the types of services offered and also more numerous ways in which data can be delayed or corrupted.

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However, local area networks (LANs) have used these technologies for two decades. Given the ubiquity of LANs in businesses and homes, there are many locations at which to receive training. Fundamental courses are offered through a number of online companies and there are multiday hands-on training courses offered in cities around North America, as well as a wide variety of classes at most community colleges.

A quick check of the course catalog for our local community college shows a healthy listing of courses, including network essentials, network wiring and cabling, hardware and software repair, network security, switching and routing, firewalls and multilayer switching.

Depending upon your location, it might make sense to work with your local college to enhance its curriculum if it appears incomplete. Another beneficial approach is to work with your company's human resources department to implement a program for employees combining online, remote and college course opportunities that award a Next Generation Network Designer (or Operator or whatever) certificate. These programs can be tailored to your company's specific requirements and may prove self-selecting as employees pursue certification with different levels of enthusiasm.

Finally, trade schools such as DeVry and ITT Tech offer a pool of prospective employees who graduate ready to implement what they have learned about computer networking. These graduates are eager for jobs using what they've learned at school, and they can be teamed with existing technicians for cross-training purposes. A telco's next-generation network has the potential to be much more complex than most enterprise networks, so look for graduates with intellectual curiosity and you may find a long-term employee.

### **SKILL THREE: TROUBLESHOOTING SKILLS**

The number of services supported over next-generation networks will be broader than the voice and Internet services offered today. This means technicians must be better at troubleshooting network problems. These skill sets will be tested, particularly since intermittent problems may occur more frequently than with traditional networks.

A new class of problems with next-generation networks will be logical rather than physical problems, and these will require more analytical, abstract thinking. For example, in an IP network it is possible for traffic to be electrically transmitted on a network wire, yet not received or transmitted by the attached router. This kind of mixed Layer 2 and Layer 3 problem requires a mental approach similar to the ability to think in three dimensions. It will take an evolved knowledge base and sensibility to approach problem issues in this level.

In addition, troubleshooting tools are more complex than the "butt-sets" that telephone techs have historically used. With SIP voice service, for example, the electrical signaling on the wire may be fine, yet the subscriber hears a voice stream that has been corrupted due to delays of a few hundred milliseconds in the network. Some people can work with this level of abstraction and complexity; others cannot. You may want to consider simple aptitude tests during the interview process to check a potential employee's capacity for abstract thinking.

### **SKILL FOUR: CUSTOMER-FACING SKILLS**

Technical skills are not the only ones needed in the next generation. Increasingly, telco technicians are interacting with customers in their homes. Technologies such as DSL and fiber to the home, as well as services such as IPTV and in-home network monitoring, require the technician to enter residences for installation or troubleshooting duties. And while it may seem funny, one technician failing to wipe his feet can create a serious customer relationship issue.

Your technicians are one of your key customer interfaces. Their skills in dealing with customers, especially those who are already upset about a delay or a network problem, will directly impact your reputation. Proper dress, the correct language to use with customers, general manners and even how to perform their job when children are watching are now all topics of concern for telco managers. A good hiring practice is to add non-technical people to the interview cycle to check how candidates interact on a human level.

Skill renewal has always been a part of business. And investing in employees is one of the most significant things a company can do to build morale and reduce turnover. Next-generation networks offer a chance for telcos to not only upgrade the services they offer their customers, but also to upgrade the skill sets of their employees for the betterment of the organization.

Find the appropriate mix of training for your people, and watch your business soar! **BBP**

### **About the Author**

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