10 tech skills you should develop during the next five years

By Debra Littlejohn Shinder, MCSE, MVP

If you want a job where you can train in a particular skill set and then never have to learn anything new, IT isn't the field for you. But if you like to be constantly learning new things and developing new skills, you're in the right business. In the late 80s, NetWare and IPX/SPX administration were the skills to have. Today, it's all about TCP/IP and the Internet.

Let's take a look at some of the skills you should be thinking about developing to keep on top of things in the tech world in the next five years.

1   Voice over IP

Many companies and consumers are already using VoIP for telephone services due to cost and convenience factors. According to a SearchVoIP.com article in June 2007, sales of pure IP PBX systems for the first quarter of 2007 increased 76% over the first quarter of the previous year.

More and more companies are expected to go to VoIP, to either supplement or replace their traditional phone lines. And because VoIP runs on the TCP/IP network, IT administrators will in many cases be expected to take responsibility for VoIP implementation and ongoing administration.

2   Unified communications

Along with the growing popularity of VoIP, the concept of unified communications—the convergence of different communications technologies, such as e-mail, voicemail, text messaging, and fax—looks to be the wave of the future. Users will expect to have access to all their communications from a single interface, such as their Inbox, and from a variety of devices: PCs, laptops, smart phones/PDAs, traditional phones, etc.

Convergence makes networks more complex, and IT administrators will need to develop skills for managing converged networks to compete in tomorrow's job market.

3   Hybrid networks

The day of the all-Windows or all-UNIX network is already past, and networks are likely to grow more, rather than less hybridized in the future. As new versions of Linux, such as Ubuntu, become friendlier for end users, we're likely to see some organizations deploying it on the desktop for certain users. However, it's likely that other users will continue to use Windows because of application requirements and/or personal preferences, and there may very well be Macintosh users in the mix as well, especially in graphics environments.

IT pros will no longer be able to get by with expertise in only one platform; you'll need to be able to support and troubleshoot different operating systems.

4   Wireless technology

Wireless networking is still in its infancy in the enterprise. Companies are (often grudgingly) establishing wireless LANs for the use of employees and visitors because it's the most convenient way for portable computers to connect to the network, but many organizations are still wary of wireless (rightly so), particularly its security implications.

But wireless isn't going away, and the future promises faster and more secure wireless technologies. You'll need to know about 802.11n, a new standard now in development and estimated to be released in late 2008, which will provide for a typical throughput of 74 Mbps with a theoretical maximum data rate of 248 Mbps and a longer range than current 802.11a/b/g standards (about 70 meters, or approximately 230 feet).

5 Remote user support

The trend is toward more employees working off-site: executives taking their laptops on the road, telecommuters working from home at least a few days per week, personnel in the field connecting back to the LAN, and so forth. The IT staff will need to be able to support these remote users while maintaining the security of the internal network.

It will be important to learn skills relating to different VPN technologies (including SSL VPN) and technologies for health monitoring and quarantining of remote clients to prevent those that don't meet minimal criteria (antivirus installed and updated, firewall enabled, etc.) from connecting to the LAN and putting the rest of the network at risk.

6 Mobile user support

Cell phones, Blackberries, and other ultra-portable devices are becoming ubiquitous and will likely grow more sophisticated in the future. Employees will expect to get their corporate e-mail on their phones and in some cases (such as Windows Mobile devices), to use terminal services client software to connect these small devices to the company LAN.

IT staff members will need to develop a plethora of skills to support mobile users, including expertise in configuration of mail servers and knowledge of security implications of the devices.

7 Software as a service

Web 2.0, the next generation of the Internet, is all about SaaS, or Software as a Service. SaaS involves delivering applications over the Web, rather than installing those applications on individual users' machines. Some IT pundits have warned that SaaS will do away with IT administrators' jobs entirely, but the more likely scenario is that the job description will change to one with less focus on deployment and maintenance of applications and more emphasis on broader-based planning, convergence, etc.

If SaaS takes off, the job market may also shift so that more jobs are concentrated in the application provider sector rather than in companies' in-house IT departments. In that situation, IT pros who have the skills relating to service provision and multi-tenant architecture will have a head start when it comes to getting and staying employed.

8 Virtualization

Virtualization has been around for a while, but now, with Microsoft heavily investing in the technology with its Windows hypervisor (Viridian), which will run on Windows Server 2008, VMWare offering VMWare Server for free, and Red Hat and SuSE planning to include Xen hypervisor technology in the next versions of their server products, we can expect the concept of virtual machines to go to a whole new level in the next few years.

Managing a VM-based network environment is a skill that will be not just handy, but essential, as more and more companies look to virtualization to consolidate servers and save on hardware costs.

9	**IPv6**

Widespread adoption of the next generation of the Internet Protocol (IPv6) hasn't come about as quickly as originally predicted, in large part because technologies such as NAT prevented the depletion of available IP addresses from happening as soon as anticipated.

However, with the number of hosts on the Internet growing steadily, the larger address space will eventually be critical to further expansion. IPv6 also offers better security with IPsec, a part of the basic protocol suite. Perhaps the inevitability of the transition is best indicated by the fact that Windows Vista, Windows Server 2008, Mac OS X 10.3, and the latest versions of other operating systems have IPv6 enabled by default.

With an entirely different address notation, called CIDR, and addresses written in hexadecimal instead of the familiar four octets of decimal numbers used by IPv4, there will be a learning curve for IT administrators. The time to tune up your IPv6 skills is now, before the transition becomes mandatory.

10	**Security**

Smart IT pros have been developing their security skills for the last several years, but the future will bring new security challenges and new security mechanisms. Technologies such as VoIP and mobile computing bring new security issues and challenges. Authentication methods are evolving from a password-based model to multifactor models, and biometrics are likely to become more important in the future.

As threats become more sophisticated, shifting from teenage hackers defacing Web sites "just for fun" to well financed corporate espionage agents and cyberterrorists bent on bringing down the country's vital infrastructure by attacking the networks that run it, security skills must keep up.

In addition to proactive measures, IT pros will need to know more about computer forensics and be able to track what is happening and has happened on their networks.

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