How to not catch a

Hoping to "hook" you into giving away valuable information is the essence of "phishing," the "PH" coming from its initial—and continued—use in fraudulent phone calls. Phishing has been around long enough that many of us think we know how to avoid it. But keep in mind that phishing is big business, big CRIMINAL business, and as time goes on, phishers are investing in ever-more sophisticated attacks. Old-school signals are not enough.

PH SH

Myths?

• The grammar and spelling will be incorrect.

The expected payoffs from phishing warrant the criminal enterprise's investment in well-written copy.

• While it contains logos and fonts resembling a known business, it still doesn't look like the real thing.

Again, the criminals expect a big payoff, so they may invest in exact look-alikes.

• There are links embedded in the email.

Not myth: this one IS valid. Don't click on links you don't know. Ignore the email or independently find the Web address of the organization you are interested in and type it into your browser.

• I don't have any information worth protecting.

Oh, but you do! Obviously, giving out personal and financial information could lead to the harmful theft of your identity. Passwords collected by phishing could access everything YOU access, along with making it possible for the next round of phishing to be launched from YOUR computer.

What to do?

Even if you're an optimistic, trusting individual, adopt a skeptical attitude toward online interactions. "Social engineering" is the term given to conning information from you. Don't be "engineered."

Create good passwords. The more characters you include, the more difficult—mathematically—the password is to break. Similarly, using numbers and special characters increases the number of possible combinations for a password. And don't be obvious—no pet's names, children's names, or passwords like "password."

Change passwords if you suspect you may have fallen for a phish or other online scam. Change them regularly even without suspicions.

Keep your systems patched and your antivirus software up-to-date.

Stay current with all account recovery services you have. Cyber thieves have a new trick—capturing your ability to change your password. For Virginia Tech PIDs, login to My VT, then, under "Personal Info," go to "Manage your Accounts."

Notify 4Help if you realize you've responded to a phish. Notifications are also appreciated to help others avoid mistaking a phish for a legitimate note. The Web address is www.4Help.vt.edu. The phone number is 540-231-4357 or 540-231-HELP.

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"Where's my disk?"

We used to get nice cases when we got a new software title or version on CDs; now it's just a Web address. Software vendors are responding to various demands and needs as they rethink software licensing.

One key driver is piracy. The Software Alliance (www.bsa.org) estimates that one in five pieces of software in the United States is unlicensed. The industry can plead with and cajole us into not infringing on their intellectual property, but technical controls to prevent the use of unlicensed software are more effective. Creating software that "phones home" periodically to check license validity is one such measure.

Another driver is BYOD—bring your own device. With multiple mobile devices and maybe a desktop, too, people don't want to buy a boxed set of software they can install on only one device. Rather, having one's suite of equipment running the same software makes life much easier.

Each of these drivers contributes to online licensing and online software distribution. Instead of receiving a box of software, you log into an online system with appropriate credentials. The software then downloads onto the device. Once loaded, it will "check in" with the licensing entity to ensure continued validity of the license. If the device is offline for too long, the software may stop working, or, typically, stop permitting updating of information.

One new Virginia Tech software offering licensed this way is the Microsoft Office 365 ProPlus for Students. This new offering replaces the Microsoft licenses previously distributed through the required undergraduate software bundle and is now available for purchase by graduate students and by students in Veterinary Medicine. Offering greater flexibility and mobility, the new license allows installations on up to five machines (desktops, laptops) and for up to five mobile devices.

Mobility is another driver for redesigning the way that software operates. For years, we've had "software-as-a-service," where all the operations and data are "in the cloud," hosted elsewhere by a vendor. Enterprise-level computing solutions HokieMart and PeopleAdmin operate this way. What's newer is "desktop" computing that is NOT on the desktop, but in the cloud. With an externally hosted location that provides the software and stores your data, you can access the system from any device with a Web browser. Microsoft's new offerings to faculty and staff for SharePoint Online and Skype for Business (formerly Lync Online) keep both the software and the data in the cloud, permitting access from any Web browser.

Another advantage to users of software-as-a-service is faster acquisition of new features in the software. "Cloud" services have more options to add features to one or another part of the service offerings as soon as the features are developed, tested, and ready for users. In the days of disks, we'd be waiting for long intervals as major upgrades were added to all portions of the software being sold.

Where is my disk? It's in the cloud.

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Wireless on campus

Providing Wi-Fi connectivity for your laptop, tablet, smartphone or other device requires keeping pace with increased demand and changing technologies. Frustrating wireless slowdowns and congestion result when demand exceeds desired speeds and capacities. This moving target has been most recently addressed by a significant upgrade to the wireless network undertaken by Network Infrastructure and Services. This investment expanded the coverage and improved the capacity of the wireless access service available, supporting data rates up to 850Mbps.

The project included wireless designs for the optimum placement of wireless access points (WAPs), installation of more than 2,000 WAPs, and, most critically, replacement of aging network switches. While wireless is largely unseen, WAPs must be appropriately located in areas of demand. The WAPs connect the wireless devices to the underlying wired network through a series of in-building switches that also support the wired network. Limits on network capabilities can be experienced at every step along the pathway: from the user's device to the WAP, from the WAP to the in-building switch, and from the switch to the campus network.

Technology ages can be likened to dog years: 10 years may move quickly for people, but 10-year-old technology is decidedly of retirement age. Approximately 200 switches that were at least 10 years old were replaced, or about two-thirds of the oldest infrastructure. The new switches support power-over-Ethernet, providing up-to-date technology that better supports voice and video applications.

The new technology also supports the faster 802.11ac wireless standard that utilizes radio transceivers in the 5 gigahertz (GHz) spectrum, in addition to transceivers in the 2.4 GHz spectrum. The 2.4 GHz transceivers allow support for broader coverage areas, while the flexibility of the 5 GHz devices allows for greater customization of coverage, more channels, and, thus, more users served.

One outcome of the upgrade is the availability of eduroam—short for "EDUcation ROAMing." The service is available on the Blacksburg campus. It facilitates network access for the Virginia Tech community and also to visiting researchers and educators from other institutions with eduroam. Likewise, Virginia Tech faculty and staff can use their Virginia Tech credentials when visiting other participating institutions.

Classroom connectivity was upgraded to better reflect the high density of usage, which presents many challenges for providing a suitable wireless service. The proliferation of mobile means that each person may have two or three wireless devices contending for the limited bandwidth available in the room. Each classroom was designed with capacity in mind and specialized network configurations to provide an improved experience.

A rapid response to the changing environment was the work to enhance wireless in Newman Library. In areas covered with book stacks, wireless is impractical since the metal stacks can significantly degrade the coverage. As the library redesigned for more online access, fewer book stacks, and more "people" spaces, more wireless capacity was needed, and a fast-track project initiated upgrades to the spaces.

Just as it is easy to forget that behind the wireless are thousands of "wires"—copper and fiber optic cables—so too it is easy to forget that the radio spectrum that is wireless is

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likewise limited. Network Infrastructure and Services works to allocate wireless access devices and to deploy technologies to meet campus needs. Unapproved wireless access devices take up limited capacity airwaves and create interference, diminishing the effectiveness of all users of the airwaves.

Outdoor wireless access is coming this summer to the Library Plaza, the space between Newman Library, the University Bookstore, Squires Student Center, and Graduate Life Center at Donaldson Brown. Included in this space is the Graduate Life Center Plaza and Amphitheatre. Wireless will also be available on the patio outside Dietrich. These outdoor spaces for congregating and interaction, along with performances in the amphitheatre space, will be outfitted with wireless, thanks, in part, to support from the Hokie Parents Fund.

New learning management system is coming

Virginia Tech is working to replace its current learning management system, Scholar.

Scholar is the university's name for Sakai, a community source system that emerged from the collaboration among several leading U.S. universities, including the University of Michigan, Indiana University, the Massachusetts Institute of Technology, Stanford University, and the University of California-Berkeley. The "community source" model of software development made the code freely available for use, and relies upon the Sakai community for the continuing development of the software. The attraction of Sakai is in the commitment of its institutional members to design, build, test, and refine the software. This support has ensured stability and some ability to meet new priorities.

The strength of Sakai is also its weakness. As long as the community continued with contributed software development, control of the features and direction of Sakai was in the hands of the higher-education community. As key institutions determine they are unable to sustain these development efforts and fall away from the project, software enhancements lag and no longer keep up with new demands in higher education. This dwindling of resources is currently affecting Sakai, with leading institutions like the University of Michigan and Indiana University dropping it.

A significant concern in selecting a learning management system is the ability to respond to current and emerging changes in higher education, including the need for mobile access from anywhere for both distance and on-site learning, integration with multimedia, greater abilities with learning analytics, and the ability to serve large enrollment courses.

As the summer approaches, watch www.tlos.vt.edu/ NextGenerationLMS/ for summaries of this spring's efforts to match these needs with the abilities of available systems. These efforts include discussions with faculty, staff, and students; evaluation of research undertaken by peer institutions; and a small set of proof-of-concept sections using Canvas, a leading candidate for a replacement system. May is the anticipated decision time, with planned availability of a new system for some courses during fall semester 2015. Later in the academic year, tools and assistance will be available to convert existing courses from Scholar to the new system.

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