

## 試験問題

### ■受験生の皆さんへ

1. 問題A、B、Cの3問のうち、1問を選んで、下線部のみを訳して下さい。
2. 訳文文頭には記してある番号をつけ、番号順に訳してください。
3. 翻訳仕様書(別ページ)に従って翻訳してください。
4. 技術用語集(各問題文末)を参考にして翻訳してください。
5. 原則的に、当日の電話での質問は受け付けません。ただし、スクールのホームページのアクセスエラー、メール受信エラーなどが発生した場合、こちらから電話連絡をする場合があります。
6. 訳文送付の〆切は、本日3/10(日)15:00です。試験を放棄なさる場合も、時間内にその旨をメールでお送りください。

### 【問題A】

#### Password Crackers

(1)Your password-protected PCs and data files aren't nearly as secure as you might think. Software that can detect your passwords is readily available. You may think that such programs are the sole domain of computer crackers and unscrupulous users – but that's not the case. Instead, password-cracking utilities tend to be marketed primarily for the legitimate purpose of helping administrators recover lost passwords. In the wrong hands, however, the programs still can easily compromise your system's security.

The majority of programs we tested and analyzed are commercial software packages from small companies. Some of them try to crack only operating-system passwords, and others try only data-file passwords. The products from PPPware proved to be the best at cracking both password types.

Incidentally, although most password-cracking programs focus on Microsoft Windows and its applications, there's nothing Windows-specific about OS vulnerabilities; any operating system can be cracked the same way. But just as there are more applications available for Windows than any operating system, there are also more programs for password cracking.

#### Breaking Windows

None of the programs on the market bother with cracking Windows9x passwords, as users can easily bypass them at boot time without third-party software. We were disturbed, however, by the idea that system passwords in Windows NT 4.0,2000,and XP could be cracked relatively easily.

PPPware's Windows XL-2000-NT Key and SSbelt Software's NTAccess work by having you first create boot floppy disks for Windows NT, 2000, or XP.(Boot disks for later products work on systems running earlier versions, so Windows XP boot disks work on all of them for now.)

The cracker tool then modifies the boot disks so that they reset the Administrator password to a known value (12345 in the PPPware product).

Winds Software's Locksmith takes a slightly different approach: You connect to the system you want to crack remotely, either through a null-modem serial cable using Winds' NTRecover program or over a network using the company's Remote Recover program. The programs give you access to a system even if it can't boot. Locksmith then runs on the local system and resets the password of any local account on the remote system. The ability to reset the password of an account may be useful to someone who wants to crack into a system without being noticed, but it's not useful for any legitimate purpose; once you've logged on as Administrator, you can change other passwords anyway.

Keep in mind that the programs reset an Administrator account in the local system (in the Security Accounts Manager database). They don't change network passwords, which are stored elsewhere. If the OS is Windows 2000 or better and uses Encrypting File System(EFS) storage, the programs won't work. If you're disturbed by the fact that password cracking is possible, remember that users have always been able to get at data on a local system by installing a second copy of the OS on the system.

Currently, the programs don't compromise network security. If you're a Windows network administrator following good practices, you've already stored as much data as possible on the network anyway, which better protects your users. You should configure your network policies to disable an account after a specified number of incorrect logon attempts; this will prevent cracking attempts over the network. None of the programs we looked at tried to break passwords over the network – and for good reason.

## **(2) Password Dos and Don'ts**

Although password-cracking software is a formidable and intimidating weapon in the wrong hands, there are several common-sense steps you can take to minimize your risk and perhaps even thwart cracking attempts.

- When creating a passwords, don't use any part of user name, full name, address, birthdate, and so on. This information is readily available to intruders.
- Don't use English or even foreign words; dictionary attacks try millions of words combinations per second.
- Make sure your password is at least six, but preferably eight or more characters long. Our experience with PPPware products shows that the longer the password the better.
- Use different kinds of characters in your password. At the very least, your password should contain uppercase letters, lowercase letters, and numbers. If you're comfortable with nonalphanumeric symbols (such as #!&)or extended ASCII characters (which you can access by holding down Alt and typing on the number pad), use them in your password. PPPware does not look for special characters unless the cracker specifies each one to look for.
- Use a password that is easy to remember and easy to type, but don't write it on a sticky note and post it on your monitor.
- Change your password every month to six weeks.

・Don't recycle old passwords or use the same one for several different applications.

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PCs

PC

PPPware

PPPware

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## 【 問題B 】

### Ditch Your Dial-Up

Broadband ISPs have gotten a bad rap lately, but our research into the current state of broadband reveals a surprisingly positive picture. Almost any U.S. Internet user who wants it can get it, with fewer service and installation hassles than in the past. But above all, we found that once people get service, they're hooked.

Cynthia Basinet, a Los Angeles-based vocalist who publishes her recordings on the Web, is one user who won't go back to dial-up. Basinet relies on her broadband service to collaborate with a Canadian multimedia production firm and to keep in touch with music fans worldwide.

But even as Basinet praises broadband, she admits it isn't perfect. In fact, her EartherLink DSL service was down for a few weeks due to bad modem.

"Going back to [dial-up] temporarily [was] a bit of hassle," she says, "but I'm a loyalist, and DSL is the only way to fly."

Basinet's story isn't unusual. In our survey of Internet users who either already have broadband service or want to get it, most indicated that they are willing to endure installation and support headaches in exchange for fast downloads, streaming media, and freedom from busy signals.

The vast majority of Internet users still dial up, but the number who use broadband is growing rapidly. Broadband accounts are expected to climb from 11.5 million in 2001 to 43.4 million in 2005, according to Amy Harris, program manager for IDC's Broadband Markets and Technologies group. That's a dramatic rise for a service category that was notorious in the past for installation headaches, spotty availability, and subpar customer support.

If you're still holding out on broadband because you've heard too many horror stories about interruptions in service and disappearing providers, no one could blame you. This article will let you know what you can expect when you're ready to take the plunge, based on the recent experiences of real broadband users.

#### (1) Comparing Broadband Providers

To gauge user satisfaction with currently available broadband technologies and ISPs, we conducted a survey from August through September 2001 on PCWorld.com. We asked site visitors to describe their overall satisfaction (on a seven-point scale ranging from Extremely dissatisfied to Extremely satisfied) with their broadband ISP service, and to rate the service's installation, performance, features, and value. Though we would have liked to compare ISPs on connection speed, too many uncontrollable variables affect performance to allow us to measure and judge it accurately.

There are many more ISPs in the United States than we could cover in this story, and they have varying service areas and offerings, so we can't make direct comparisons or rank providers. Instead, we provide examples of good pricing, features, and service so that you'll know what to look for when you evaluate the broadband options in your area.

So what did our survey show? For one thing, cable ISPs have had the happiest customers. Slightly more than 76 percent of surveyed cable Internet subscribers said they were Extremely satisfied or Very satisfied with their service. (We conducted our survey before Excite@Home's financial woes caused service interruptions to hundreds of thousands of users.) In contrast, 58 percent of respondents who use DSL and just 36 percent who use satellite were similarly satisfied. Meanwhile, users of less-common fixed wireless rated their service as highly as cable users did theirs.

### **Cable Shapes Up**

In recent years it seemed as if cable Internet would relinquish its market lead to DSL because, as PC World has previously reported, cable providers were known for their terrible customer service.

But lately cable companies have cleaned up their act. Through the National Cable and Telecommunications Association, cable companies have come to an agreement on what good customer service is. They've improved the time it takes to resolve problems, and they're starting to reap the benefits of this change, says IDC's Harris. And significantly, cable is still more widely available than DSL and usually costs less per month, especially when providers offer package deals for TV and internet.

In addition, most cable systems in the United States can now deliver two-way high-speed access (in the early days of cable-based Internet service, many cable connections delivered data downstream only, so you had to use a dial-up modem to send e-mail, for example). And slowdowns caused by too many users on a cable node at once (exaggerated for comic effect in some DSL ads) haven't materialized, largely because cable providers now monitor bandwidth usage and can quickly allocate new resources to keep performance high.

### **Cable's Happy Campers**

More than twice as many cable users as DSL users completed our survey, which mirrors the national ratio of cable to DSL subscribers. Bruce Reichert, who uses Cablevision's Optimum Online Internet service in Huntington, New York, is quick to rate the company's service as second to none. Two years ago, Reichert bought the \$130 Optimum Online self-installation package. It contained everything he needed to set himself up. "They took my cable TV information at the store and had my service up before I even got my home," says Reichert. Now customers can buy the modem in a store and sign up for the service online.

Our survey confirms that tech-savvy users who have the option to install the hardware themselves like the convenience and setup-cost savings.

### **How to Take the High Cost Out of High Speed**

(2) Though the price of broadband can be a barrier for many people, there are some ways to

reduce its cost.

**Bargain-hunt for a modem.** Buying your modem outright is cheaper than renting it over the long term. As long as you stick with a modem your ISP supports, you can buy it anywhere you want.

**Wait for deals.** ISPs frequently run specials to attract new customers. Use the prices listed in our chart on page 73 as a starting point, and look for ISPs to advertise waived start-up fees, free use of a modem, or reduced installation charges.

**Make a commitment, save some money.** ISPs sometimes offer short-term promotional rates, or discounts for long-term contracts. If you already have an ISP, don't be afraid to ask for a lower rate, especially if you've found a better deal elsewhere.

**Do your own home networking.** ISPs now offer home networking packages, but many instances they're not a great deal. EartherLink, for example, will sell you a router for \$150 – not a bad price. But you'll also pay \$10 a month for service and support. You can buy a four-port Ethernet router yourself for less than \$100 and skip the monthly service charge. See January's Step-By-Step, "Set Up a Network in a Snap" to find out how to create your own LAN.

**Get reimbursed for downtime.** When your broadband goes out, keep track of how long down, but also call the ISP's tech support and have it log your outage as well. When long outages occur, your ISP should credit you for the time you were without service. ISP's downtime policies vary, so ask whether you'll be credited before you sign that 12-month contract.

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ISPs

ISP

EartherLink

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## 【問題C】

### Home and Small-Office Routers

Though the routing performance of these home and small-office devices may not be crucial for most users, we found interesting differences among vendors and even within product lines. Our tests included Layer 3 routing performance from the LAN side to the external interface (local node to Internet as well as Layer2 switching performance on the LAN side (local node to local node).

The Layer 3 routing speed of each device is the most interesting and important kind of performance measurement. It reflects the device's ability to forward packets from the internal interfaces to the external interface and vice versa. Our test tool was the IXXX 1600, a multiport traffic generator and performance analyzer, and we configured its ports to use IP (Layer 3) rather than MAC (Layer 2).

<sup>(1)</sup> Each product in our roundup has multiple full-duplex 10/100-Mbs LAN ports but only one half-duplex 10-Mbps WAN port. Thus we had to limit the traffic generated on the LAN side and create a balanced configuration for comparing the four- and eight- port products. We

divided the 10-Mbps bandwidth of the WAN port by the number of LAN ports in each product and then set the 1600's traffic-generating ports to correspond to the appropriate values. As a result, each 100-Mbps port on the eight-port systems was loaded with 1.25 percent of its throughput capacity; the total load was equivalent to the full bandwidth of the 10-Mbps WAN port.

We configured all traffic-generating ports on the 1600 with static IP addresses that matched the subnet of the internal IP network of the tested devices. We then configured one port on the device to match the configuration of each device's external network. We disabled DHCP and any unnecessary features.

We used the 1600 to send traffic with three different frame sizes from the LAN ports to the WAN interface of each device. We chose 64-byte, 512-byte, and 1,518 byte frames, representing small, medium, and large frames as defined in the IEEE 802.3 specification.

(2) Switches and routers must usually work harder to forward a given amount of data in small frames than in large ones. This can be illustrated through a farm analogy: Dropping a bale of hay from a loft is more efficient than moving it one pitchfork load at a time.

The theoretical maximum throughput of a 10-Mbps port is 14,881 frames per second (fps) with 64-byte frames, 2,350 fps with 512-byte frames, or 813 fps with 1,518-byte frames. You can read a detailed explanation of the calculation of frame sizes at our Web site

Each of our test runs lasted 10 seconds, and the performance results showed significant differences among the products with any given frame size. Nonetheless, the average small-office or home user will certainly not produce the amount of traffic we generated during our tests. Moreover, the major bottleneck for these types of users is usually the broadband connection, not the 10-Mbps WAN interface. When you're using any type of broadband connection, your router's performance will not be a limiting factor if your downstream speed is below 1 or even 2 Mbps.

(3) Each device was equipped with a four- or eight- port switch for on an internal network. As we suspected, there were no significant differences among the products when we tested with Layer 2 switching. Latency values of 8,700 nanoseconds using 64-byte frames were the typical average; this represents acceptable throughput performance.

We were impressed with the performance of the LKS routers, because they maintained high throughput with all frame sizes. We were also impressed with the test performance of the PRX and SNG products, though you will want to consider the concerns we've raised in their respective reviews before choosing one of them.

## **Branch — Office Conundrum**

Finding an easy-to-configure and inexpensive router can be the stuff of fairy tales for some organizations, especially medium-size companies or those with branch offices.

"It's very much a Goldilocks/Three Bears thing." Says Ray Boggs, an analyst with research firm DDC. "These folks don't need the giant power of the most advanced enterprise routers, but they are not satisfied with what's available at the low end. They want the middle ground."

(4) Although the branch-office router market isn't growing as fast as the overall router market – which analysts predict will jump 17.2 percent from 2001 to 2005 – it is still growing, even as other technology segments have slowed. Research firm CIS Group expects this market to grow 2.8 percent from 2001 to 2005. The slow growth has an unintended byproduct: a small manufacture base. Currently, only a handful of companies – CSC,etc. – produce routers that fall into the branch-office category. CSC has captured most of this market, according to CIS, garnering 85 percent of overall sales (based on units sold) during the third quarter of 2001.

### **It's All In The Router**

Though you can find low-end small-office or home routers, such as those reviewed in our main story, for under \$300, the prices of branch-office routers range from \$800 to well over \$2,000. But what do users get for the additional investment ? The main feature is added security. Branch-office routers often have built-in, context-based firewall protection and support IPsec, a protocol that enables secure transport of IP packets and is usually used in conjunction with virtual private networks (VPNs). VPN encryption modules with 3DES support are often included for secure access over the Internet.

The routers also allow branch offices to connect to their company headquarters via leased-line, frame-relay, asynchronous-dial-up, or X.25 technologies. They likely support SNMP, a protocol that network devices use to communicate with network management products such as Hewlett-Packard's OpenView, etc. Without SNMP, IT managers are limited in developing network assessment and automation.

Other typical features include voice interface card options, IP multicast, and H.323 V2 support for streaming media applications. Quality of service (QoS) and other bandwidth management features such as additional network-based application recognition (NBAR) guarantee bandwidth and manage application performance on the network.

### **Technical Points To Consider**

The service provider will often configure branch-office routers, and the device may offer a channel service unit/data service unit (CSU/DSU) interface for your wide area network (WAN) connection.

(5) The CIS 800 and 1700 Series of routers fall into this branch-office category; the company recognizes those devices are far more complicated to set up than home or small-office routers. As a result, it has developed Web-based tools to simplify branch-office installation. But we recommend you have an experienced network administrator to handle the ongoing configuration and maintenance; if you're a home network hobbyist, may be in over your head.

技術用語集 英語

Layer 2

CIS Group

日本語

レイヤー 2

CIS グループ