Networked computers hit by intelligent 'virus'

- Top secret computers safe from attack
- Cornell University tracks virus' creator

Washington

THE vulnerability of networked computers to attack by computer 'viruses' made world headlines last week as thousands, possibly tens of thousands, of computers using the UNIX operating system were infiltrated via electronic mail. Although the virus did not destroy any data or compromise programs, the cost of removing the flaw that allowed virus infection will be substantial.

When the virus was first detected at computer installations around the country on Wednesday night last week, worried system operators took drastic measures to isolate their computers from the Internet network that was transmitting the virus. Such measures, although appropriate at the time, turned out to be unnecessary. Stephen Wolff, director of the division of networking, communications research and infrastructure at the National Science Foundation (NSF), says the virus was totally innocuous, merely making a copy of itself and moving on to the next system. But some systems slowed down substantially or crashed as the virus searched files in an attempt to carry out its mission.

The virus only affected machines running the Unix operating system, and only the version known as Berkeley Unix. Once released last Wednesday, the virus traveled over the ARPANET, Milnet and NSF Net computer networks, establishing itself at host computers. The program took advantage of a debugging option included with some distributions of the electronic mail program "sendmail" that allowed binary code to be introduced into the host machine. Using loopholes in the Unix security system, the virus obtained access to machines and accounts that would normally be inaccessible without the proper password. Wolff described the virus program as "very clever". It encrypted its instructions, decrypting them line by line as they were executed.

Once its route of attack was determined, NSF prepared a simple patch to the mail program and distributed it to network users. With the patch in place, Wolff says the systems are immune from that particular mode of attack.

The virus was apparently created by Robert T. Morris, a graduate student in computer science at Cornell University in Ithaca, New York. A Cornell spokesman says the university has found a file in Morris' computer account with some of the same passwords that were found in

versions of the virus recovered from remote machines. The campus is now going through backup tapes to try to follow the course of the virus' development.

Morris, who has only been a graduate student at Cornell since the start of this year, left campus last week to go to the home of his father, Robert T. Morris, Sr., who, ironically, is chief scientist at the National Computer Security Center, a division of the National Security Agency.

Jeffrey Schiller, Hardware Manager at Massachusetts Institute of Technology (MIT), said unlike other viruses that have done damage in the past, this virus was "completely automated" in the sense that it decoded user passwords, and replicated itself on new machines without any user interface.

Most systems affected by the virus were back on the Internet by Friday last week. Officials at the Los Alamos and Lawrence Livermore National Laboratories said both installations were affected, but that the top secret computers containing highly classified information are not accessible from the networks over which the virus travelled.

ARPANET and Milnet were both originally established with funding from the Department of Defense, and both are heavily used by various Pentagon agencies. A Pentagon spokesman said that many defence installations were infected, but all were in the process of implementing fixes that would eliminate the flaw that allowed the viral attack.

A spokesman for the National Aeronautics and Space Administration (NASA) said that several NASA facilities including the Jet Propulsion Laboratory in Pasadena California, and the Ames Research Center at Moffett Field, California were affected.

Had the virus program been written slightly differently it might have gone undetected for a long time. According to James D. Bruce, MIT professor of electrical engineering and vice-president for Information Systems, a programming error caused the program to replicate rapidly, consuming large amounts of computer time, causing users to experience sluggish performance. Had the code caused the program to suspend operation for a time after arriving at a new host, or operate in the background, its presence would scarcely have been felt.

Joseph Palca & Seth Shulman

Sakharov to stand for Supreme Soviet?

London

ACADEMICIAN Andrei Sakharov — at present visiting the United States — may stand for election to the Supreme Soviet (parliament) of the USSR in the multi-candidate elections promised for next March. Sakharov's candidacy was proposed during the recent conference of *Memorial*, the "informal" society established recently in Moscow which plans to erect monuments and a "memorial complex and documentation centre" honouring the victims of Stalin's purges. Soviet political theorists do not envisage a multi-party system, but support the idea of candidates from special interest groups, such as *Memorial*, so long as their aims do not conflict with the Soviet system.

Addressing the *Memorial* conference in Moscow, Sakharov, who is honorary chairman of the society, said that not only the victims of Stalin, but also those of Khrushchev and Brezhnev's repressions must be exonerated and honoured. He urged the release of all persons detained in psychiatric hospitals on account of political activities.

Recent statements by Soviet officials claim that all such persons have already been released or are having their cases reviewed. Psychiatric prison hospitals have now been closed and those unfortunates still detained in "ordinary" psychiatric hospitals are, it is maintained, genuinely disturbed.

Vera Rich
■ US-Soviet talks on psychiatric abuse, page 98.

Smokeless cigarettes in trouble

Washington

THE American Medical Association is asking state medical authorities to halt the test marketing of 'Premier', the world's first smokeless cigarette. Premier 'cigarettes' consist of an aluminium tube containing nicotine-impregnated 'flavour pellets' heated by a slow-burning carbon tip. Although the cigarettes are free from carcinogens, the American Medical Association contends that they are potentially dangerous as delivery systems for the addictive drug nicotine.

Premier is now on test sale in Tucson, St Louis and Phoenix at a price about 25 per cent higher than that of conventional cigarettes. The federal Food and Drug Administration is also considering pleas for a review of Premier's safety. Premier has been developed by the R. J. Reynold's tobacco company, manufacturer of Winston cigarettes, partly in response to a decline in conventional cigarette sales.

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