Reinforcing security through IBM research.

Revolutionizing communications and commerce, the Internet connects millions of people around the world, delivering unprecedented access to information and services. Yet with all the technological possibilities it offers, the Internet also poses unique security exposures: unauthorized users who break into systems as a challenge and steal money, services or merchandise; industrial spies who look for valuable business data; and malicious computer viruses spread to disrupt or destroy critical data.

A recognized leader in security technology, IBM is committed to securing the Internet for e-business. Many of our security innovations are the result of efforts by IBM scientists and technical experts at IBM Research facilities worldwide. These innovations include research in virus detection, cryptography protection, hacking prevention and network security.

Virus protection

Antivirus research at the IBM T.J. Watson Research Center in Hawthorne, New York, led to IBM's patented neural network boot detection technology, which uses artificial intelligence to detect viruses. In August 1999, Symantec Corporation announced it would integrate this new IBM technology in its popular Symantec™ Norton AntiVirus™ products. IBM and Symantec are working together to create a global system that will find and analyze new viruses, and create and automatically distribute a cure around the world faster than a virus can spread.[1]

Cryptography solutions

Researchers at IBM Research Laboratories around the world are involved in a variety of projects concerning cryptographic protocol design, secure transactions and embedded cryptographic devices. In January 1999, the IBM S/390® cryptographic coprocessor chip received the highest certification for commercial security awarded by the U.S. Government.[2] Among other projects, IBM's cryptography group is collaborating with the Financial Services Technology Consortium on an electronic check project that would allow users to securely send and receive electronic payment over the Internet — analogous to the paper checks we use today.

e-business

IBM Research developed the advanced technology IBM 4758 PCI Cryptographic Coprocessor — a high-security, high-performance coprocessor — that helps you get the most out of your technology investment by offloading compute-intensive cryptographic operations from the host system. The tamper-responding hardware environment of the coprocessor is ideal for securing sensitive computations and cryptographic operations. The 4758 coprocessor was the world's first piece of hardware to achieve Federal Information Processing Standards (FIPS) 140-1 Level 4 certification in December 1998.

Network security

The Global Security Analysis Lab, operated by IBM Research in New York and Switzerland, focuses on network security risks and solutions. The lab provides IBM and its customers with current information about protection against unauthorized network access. Using break-in techniques from actual incidents, IBM analysts probe for weak links in customer systems, and use the results to recommend security improvements.

Advanced security projects

IBM researchers are involved in a broad range of advanced security projects, including:

- Smart cards embedded with microchips that perform a variety of functions to protect information, including user identification, access control and e-check verification

- Biometric security sensors for retinal scans, voice-printing and fingerprint recognition

- Development of a new Advanced Encryption Standard (AES), a replacement for the 25-year-old Data Encryption Standard (DES) that was based on an IBM Research invention

- Advanced digital signature techniques

- Proactively secure solutions, including public key signatures

- New authentication protocols and secure, multiparty computation protocols

You can depend on IBM for the technology, experience, software and services you need to develop a strong security foundation for your enterprise.

For more information

To learn more about IBM security solutions, contact IBM Global Services, your IBM client representative or IBM Business Partner. Or visit our Web site at *www.ibm.com/security*.

[1] Symantec press release. "Symantec Adds IBM Neural Network Boot Detection Technology to Norton AntiVirus." Cupertino, CA. August 4, 1999.

[2] The National Institute of Standards and Technology (NIST) added the IBM S/390 CMOS Cryptographic Coprocessor to its Cryptographic Modules Validation list. The industry-leading IBM security product was formally recognized at the 22nd National Information System's Security Conference awards ceremony in Gaithersburg, Maryland, October 1999.