

For the E-Spy, Too Much Information

You may feel overwhelmed keeping track of the communications gadgetry in your life — BlackBerry, cellphone, voice mail, work e-mail, home e-mail, instant messaging. But what has the explosion meant for the spies whose job is to listen in on the entire chattering world?

None of the nation's 15 intelligence agencies has a greater challenge than the National Security Agency, the eavesdropping behemoth at Fort Meade, Md., where Lt. Gen. Keith B. Alexander began this month as the 16th director.

When it was created in 1952, the agency intercepted foreign communications that used land-line phones, telegrams, military radios and more obscure signals, like missile telemetry. Those targets grew steadily until the 1990's, when the advent of mobile phones and the Internet touched off exponential growth. Terrorist cells, which have replaced Soviet missile bases as the No. 1 target, can hide their plotting in the cacophony of a wired globe.

If the N.S.A. in its early days helped invent the computer and had a monopoly on the arcane art of code-breaking, today it struggles to keep up with the likes of Microsoft and virtually unbreakable computerized encryption that even teenagers use to seal e-mail. Phone traffic has migrated from easy-to-catch satellite traffic to hard-to-tap fiber-optic cable.

"The volume, variety and velocity of human communications makes our mission more difficult each day," General Alexander's predecessor, Gen. Michael V. Hayden, told the Senate in 2002: "N.S.A. had competed successfully for four decades against a resource-poor, oligarchic, technologically inferior and overly bureaucratic nation-state. Now we had to keep pace with a global telecommunications revolution, probably the most dramatic revolution in human communications since Gutenberg's invention of movable type."

The agency's backlog of untranslated, unread intercepts is secret, but it almost certainly dwarfs that of the F.B.I., where the pile of unreviewed tapes of terrorist suspects has doubled in a year, to more than 8,000 hours' worth, the Justice

Department's inspector general says. Analysts worry that lost in a virtual pile of unexamined N.S.A. transcripts could be the key to foiling the next terrorist attack or the secrets of Iran's nuclear program.

General Hayden began a multi-billion-dollar modernization program, but the effort is years behind schedule and hundreds of millions over budget. Though the N.S.A. is no longer as supersecret as in the days when employees joked that the letters stood for No Such Agency or Never Say Anything, officials won't say what all the spending has achieved.

Some do hint, however, that for the eavesdroppers, the communications boom is an opportunity as well as a burden. Like everyone else, foreign spies and operatives of Al Qaeda find it very easy to pick up their cellphones or fire off e-mail messages whenever the urge strikes. **SCOTT SHANE**

The Chattering Masses

Telephone calls represent about 98 percent of new information generated in the world each year, according to a 2003 study. The National Security Agency is charged with sorting through it all.



N.S.A. ESTABLISHED

1952

1960's

70's

80's

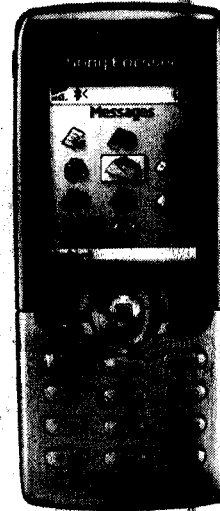
90's

00's

WORLDWIDE TELEPHONE LINES
Includes cell-phones, which appeared in the mid-80's.

WORLDWIDE INTERNET USERS

2.5 BILLION



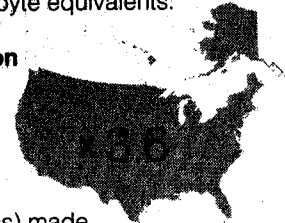
HOW MUCH DATA? The amount of information contained in all phone calls and e-mail messages is incalculable, but that hasn't stopped scientists from making estimates.

The volume of the world's phone calls in 2002, if their sounds were recorded digitally (which takes up much more disk space than simple print does), would amount to

17.3 exabytes.

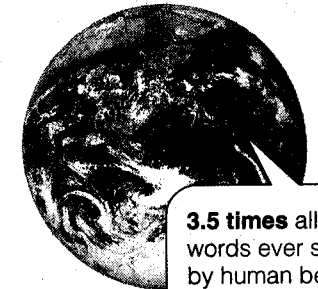
That's 17,300,000,000,000,000 bytes. (A single printed character — "B" — is one byte.) Here are some 17.3-exabyte equivalents:

865 billion trees (a forest covering 3.6 times the U.S. land mass) made into paper and printed with text.



8,650 times the content of all academic research libraries in the United States.

86.5 times the content of all existing printed material.



3.5 times all the words ever spoken by human beings, set in print.

Sources: Worldwatch Institute; Computer Industry Almanac; "How Much Information? 2003" by Peter Lyman and Hal R. Varian, University of California, Berkeley; Roy Williams, California Institute of Technology; Forst Service