

106TH CONGRESS  
1ST SESSION

# H. R. 2086

To authorize funding for networking and information technology research and development for fiscal years 2000 through 2004, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

JUNE 9, 1999

Mr. SENSENBRENNER (for himself, Mr. BROWN of California, Mr. DAVIS of Virginia, Mrs. MORELLA, Mr. EWING, Mr. COOK, Mr. BRADY of Texas, Mr. EHLERS, Mr. ETHERIDGE, Mr. WELDON of Florida, Mr. KUYKENDALL, Ms. STABENOW, Mr. LUCAS of Oklahoma, Mr. SMITH of Michigan, Mr. DOYLE, Mr. ROHRABACHER, Ms. EDDIE BERNICE JOHNSON of Texas, Ms. JACKSON-LEE of Texas, Mr. CAPUANO, Mr. BARTLETT of Maryland, Mr. UDALL of Colorado, Ms. WOOLSEY, Mr. CALVERT, Mr. GUTKNECHT, Ms. LOFGREN, and Mr. GORDON) introduced the following bill; which was referred to the Committee on Science, and in addition to the Committee on the Ways and Means, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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## A BILL

To authorize funding for networking and information technology research and development for fiscal years 2000 through 2004, and for other purposes.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Networking and Infor-  
3 mation Technology Research and Development Act”.

4 **SEC. 2. FINDINGS.**

5 The Congress makes the following findings:

6 (1) Information technology will continue to  
7 change the way Americans live, learn, and work. The  
8 information revolution will improve the workplace  
9 and the quality and accessibility of health care and  
10 education and make government more responsible  
11 and accessible.

12 (2) Information technology is an imperative en-  
13 abling technology that contributes to scientific dis-  
14 ciplines. Major advances in biomedical research, pub-  
15 lic safety, engineering, and other critical areas de-  
16 pend on further advances in computing and commu-  
17 nications.

18 (3) The United States is the undisputed global  
19 leader in information technology.

20 (4) Information technology is recognized as a  
21 catalyst for economic growth and prosperity.

22 (5) Information technology represents one of  
23 the fastest growing sectors of the United States  
24 economy, with electronic commerce alone projected  
25 to become a trillion-dollar business by 2005.

1           (6) Businesses producing computers, semi-  
2           conductors, software, and communications equip-  
3           ment account for one-third of the total growth in the  
4           United States economy since 1992.

5           (7) According to the United States Census Bu-  
6           reau, between 1993 and 1997, the information tech-  
7           nology sector grew an average of 12.3 percent per  
8           year.

9           (8) Fundamental research in information tech-  
10          nology has enabled the information revolution.

11          (9) Fundamental research in information tech-  
12          nology has contributed to the creation of new indus-  
13          tries and new, high-paying jobs.

14          (10) Scientific and engineering research and the  
15          availability of a skilled workforce are critical to con-  
16          tinued economic growth driven by information tech-  
17          nology.

18          (11) In 1997, private industry provided most of  
19          the funding for research and development in the in-  
20          formation technology sector. The information tech-  
21          nology sector now receives, in absolute terms, one-  
22          third of all corporate spending on research and de-  
23          velopment in the United States economy.

24          (12) The private sector tends to focus its  
25          spending on short-term, applied research.

1           (13) The Federal Government is uniquely posi-  
2           tioned to support long-term fundamental research.

3           (14) Federal applied research in information  
4           technology has grown at almost twice the rate of  
5           Federal basic research since 1986.

6           (15) Federal science and engineering programs  
7           must increase their emphasis on long-term, high-risk  
8           research.

9           (16) Current Federal programs and support for  
10          fundamental research in information technology is  
11          inadequate if we are to maintain the Nation's global  
12          leadership in information technology.

13 **SEC. 3. AUTHORIZATION OF APPROPRIATIONS.**

14          (a) NATIONAL SCIENCE FOUNDATION.—Section  
15          201(b) of the High-Performance Computing Act of 1991  
16          (15 U.S.C. 5521(b)) is amended—

17               (1) by striking “From sums otherwise author-  
18               ized to be appropriated, there” and inserting  
19               “‘There’”;

20               (2) by striking “1995; and” and inserting  
21               “1995;”; and

22               (3) by striking the period at the end and insert-  
23               ing “; \$445,000,000 for fiscal year 2000;  
24               \$468,500,000 for fiscal year 2001; \$493,200,000 for  
25               fiscal year 2002; \$544,100,000 for fiscal year 2003;

1 and \$571,300,000 for fiscal year 2004. Amounts au-  
2 thORIZED under this subsection shall be the total  
3 amounts authorized to the National Science Founda-  
4 tion for a fiscal year for the Program, and shall not  
5 be in addition to amounts previously authorized by  
6 law for the purposes of the Program.”.

7 (b) NATIONAL AERONAUTICS AND SPACE ADMINIS-  
8 TRATION.—Section 202(b) of the High-Performance Com-  
9 puting Act of 1991 (15 U.S.C. 5522(b)) is amended—

10 (1) by striking “From sums otherwise author-  
11 ized to be appropriated, there” and inserting  
12 “There”;

13 (2) by striking “1995; and” and inserting  
14 “1995;”; and

15 (3) by striking the period at the end and insert-  
16 ing “; \$164,400,000 for fiscal year 2000;  
17 \$201,000,000 for fiscal year 2001; \$208,000,000 for  
18 fiscal year 2002; \$224,000,000 for fiscal year 2003;  
19 and \$231,000,000 for fiscal year 2004.”.

20 (c) DEPARTMENT OF ENERGY.—Section 203(e)(1) of  
21 the High-Performance Computing Act of 1991 (15 U.S.C.  
22 5523(e)(1)) is amended—

23 (1) by striking “1995; and” and inserting  
24 “1995;”; and

1           (2) by striking the period at the end and insert-  
2           ing “; \$100,600,000 for fiscal year 2000;  
3           \$103,500,000 for fiscal year 2001; \$107,000,000 for  
4           fiscal year 2002; \$125,700,000 for fiscal year 2003;  
5           and \$129,400,000 for fiscal year 2004.”.

6           (d) NATIONAL INSTITUTE OF STANDARDS AND  
7           TECHNOLOGY.—(1) Section 204(d)(1) of the High-Per-  
8           formance Computing Act of 1991 (15 U.S.C. 5524(d)(1))  
9           is amended—

10           (A) by striking “1995; and” and inserting  
11           “1995;”; and

12           (B) by striking “1996; and” and inserting  
13           “1996; \$9,000,000 for fiscal year 2000; \$9,500,000  
14           for fiscal year 2001; \$10,500,000 for fiscal year  
15           2002; \$16,000,000 for fiscal year 2003; and  
16           \$17,000,000 for fiscal year 2004; and”.

17           (2) Section 204(d) of the High-Performance Com-  
18           puting Act of 1991 (15 U.S.C. 5524(d)) is amended by  
19           striking “From sums otherwise authorized to be appro-  
20           priated, there” and inserting “There”.

21           (e) NATIONAL OCEANIC AND ATMOSPHERIC ADMIN-  
22           ISTRATION.—Section 204(d)(2) of the High-Performance  
23           Computing Act of 1991 (15 U.S.C. 5524(d)(2)) is  
24           amended—

1 (1) by striking “1995; and” and inserting  
2 “1995;”; and

3 (2) by striking the period at the end and insert-  
4 ing “; \$13,500,000 for fiscal year 2000;  
5 \$13,900,000 for fiscal year 2001; \$14,300,000 for  
6 fiscal year 2002; \$14,800,000 for fiscal year 2003;  
7 and \$15,200,000 for fiscal year 2004.”.

8 (f) ENVIRONMENTAL PROTECTION AGENCY.—Sec-  
9 tion 205(b) of the High-Performance Computing Act of  
10 1991 (15 U.S.C. 5525(b)) is amended—

11 (1) by striking “From sums otherwise author-  
12 ized to be appropriated, there” and inserting  
13 “There”;

14 (2) by striking “1995; and” and inserting  
15 “1995;”; and

16 (3) by striking the period at the end and insert-  
17 ing “; \$4,200,000 for fiscal year 2000; \$4,300,000  
18 for fiscal year 2001; \$4,500,000 for fiscal year  
19 2002; \$4,600,000 for fiscal year 2003; and  
20 \$4,700,000 for fiscal year 2004.”.

21 **SEC. 4. NETWORKING AND INFORMATION TECHNOLOGY**  
22 **RESEARCH AND DEVELOPMENT.**

23 (a) NATIONAL SCIENCE FOUNDATION.—Section 201  
24 of the High-Performance Computing Act of 1991 (15

1 U.S.C. 5521) is amended by adding at the end the fol-  
2 lowing new subsections:

3       “(c) NETWORKING AND INFORMATION TECHNOLOGY  
4 RESEARCH AND DEVELOPMENT.—(1) Of the amounts au-  
5 thorized under subsection (b), \$316,000,000 for fiscal  
6 year 2000; \$333,000,000 for fiscal year 2001;  
7 \$352,000,000 for fiscal year 2002; \$390,000,000 for fis-  
8 cal year 2003; and \$415,000,000 for fiscal year 2004 shall  
9 be available for grants for long-term basic research on net-  
10 working and information technology, with priority given  
11 to research that helps address issues related to high end  
12 computing and software and network stability, fragility,  
13 reliability, security (including privacy), and scalability.

14       “(2) In each of the fiscal years 2000 and 2001, the  
15 National Science Foundation shall award under this sub-  
16 section up to 20 large grants of up to \$1,000,000 each,  
17 and in each of the fiscal years 2002, 2003, and 2004, the  
18 National Science Foundation shall award under this sub-  
19 section up to 30 large grants of up to \$1,000,000 each.

20       “(3)(A) Of the amounts described in paragraph (1),  
21 \$40,000,000 for fiscal year 2000; \$40,000,000 for fiscal  
22 year 2001; \$45,000,000 for fiscal year 2002; \$45,000,000  
23 for fiscal year 2003; and \$50,000,000 for fiscal year 2004  
24 shall be available for grants of up to \$5,000,000 each for  
25 Information Technology Research Centers.



1           “(B) For purposes of this paragraph, the term ‘Infor-  
2 mation Technology Research Centers’ means groups of 6  
3 or more researchers collaborating across scientific and en-  
4 gineering disciplines on large-scale long-term research  
5 projects which will significantly advance the science sup-  
6 porting the development of information technology or the  
7 use of information technology in addressing scientific  
8 issues of national importance.

9           “(d) MAJOR RESEARCH EQUIPMENT.—(1) In addi-  
10 tion to the amounts authorized under subsection (b), there  
11 are authorized to be appropriated to the National Science  
12 Foundation \$70,000,000 for fiscal year 2000,  
13 \$70,000,000 for fiscal year 2001, \$80,000,000 for fiscal  
14 year 2002, \$80,000,000 for fiscal year 2003, and  
15 \$85,000,000 for fiscal year 2004 for grants for the devel-  
16 opment of major research equipment to establish terascale  
17 computing capabilities at 1 or more sites and to promote  
18 diverse computing architectures.

19           “(2) Grants awarded under this subsection shall be  
20 awarded through an open, peer-reviewed competition.

21           “(3) As a condition of receiving a grant under this  
22 subsection, an awardee must agree—

23                   “(A) to connect to the National Science Foun-  
24 dation’s Partnership for Advanced Computational  
25 Infrastructure network;

1           “(B) to the maximum extent practicable, to co-  
2           ordinate with other federally funded large-scale com-  
3           puting and simulation efforts; and

4           “(C) to provide open access to all grant recipi-  
5           ents under this subsection or subsection (c).

6           “(e) INFORMATION TECHNOLOGY INTERNSHIP  
7 GRANTS.—(1) Of the amounts described in subsection  
8 (c)(1), \$10,000,000 for fiscal year 2000, \$15,000,000 for  
9 fiscal year 2001, \$20,000,000 for fiscal year 2002,  
10 \$25,000,000 for fiscal year 2003, and \$25,000,000 for fis-  
11 cal year 2004 shall be available for institutions of higher  
12 education to establish scientific internship programs in in-  
13 formation technology research at private sector companies.  
14 Grants under this subsection shall be made on the condi-  
15 tion that at least an equal amount of funding for the in-  
16 ternship shall be provided by the private sector company  
17 at which the internship will take place.

18           “(2) For purposes of this subsection, the term ‘insti-  
19 tution of higher education’ has the meaning given that  
20 term in section 1201(a) of the Higher Education Act of  
21 1965 (20 U.S.C. 1141(a)).

22           “(f) PEER REVIEW.—All grants made under this sec-  
23 tion shall be made only after being subject to peer review  
24 by panels or groups having private sector representation.”.

25           (b) OTHER PROGRAM AGENCIES.—

1           (1) NATIONAL AERONAUTICS AND SPACE AD-  
2           MINISTRATION.—Section 202(a) of the High-Per-  
3           formance Computing Act of 1991 (15 U.S.C.  
4           5522(a)) is amended by inserting “, and may par-  
5           ticipate in or support research described in section  
6           201(c)(1)” after “and experimentation”.

7           (2) DEPARTMENT OF ENERGY.—Section 203(a)  
8           of the High-Performance Computing Act of 1991  
9           (15 U.S.C. 5523(a)) is amended by striking the pe-  
10          riod at the end and inserting a comma, and by add-  
11          ing after paragraph (4) the following:

12         “and may participate in or support research described in  
13         section 201(c)(1).”.

14          (3) NATIONAL INSTITUTE OF STANDARDS AND  
15          TECHNOLOGY.—Section 204(a)(1) of the High-Per-  
16          formance Computing Act of 1991 (15 U.S.C.  
17          5524(a)(1)) is amended by striking “; and” at the  
18          end of subparagraph (C) and inserting a comma,  
19          and by adding after subparagraph (C) the following:  
20          “and may participate in or support research de-  
21          scribed in section 201(c)(1); and”.

22          (4) NATIONAL OCEANIC AND ATMOSPHERIC AD-  
23          MINISTRATION.—Section 204(a)(2) of the High-Per-  
24          formance Computing Act of 1991 (15 U.S.C.  
25          5524(a)(2)) is amended by inserting “, and may

1 participate in or support research described in sec-  
2 tion 201(c)(1)” after “agency missions”.

3 (5) ENVIRONMENTAL PROTECTION AGENCY.—  
4 Section 205(a) of the High-Performance Computing  
5 Act of 1991 (15 U.S.C. 5525(a)) is amended by in-  
6 serting “, and may participate in or support re-  
7 search described in section 201(c)(1)” after “dynam-  
8 ics models”.

9 **SEC. 5. NEXT GENERATION INTERNET.**

10 Section 103 of the High-Performance Computing Act  
11 of 1991 (15 U.S.C. 5513) is amended—

12 (1) by striking subsection (c) and redesignating  
13 subsection (d) and subsection (c); and

14 (2) in subsection (c), as so redesignated by  
15 paragraph (1) of this section—

16 (A) in paragraph (1)—

17 (i) by striking “1999 and” and insert-  
18 ing “1999,”; and

19 (ii) by inserting “, \$15,000,000 for  
20 fiscal year 2001, and \$15,000,000 for fis-  
21 cal year 2002” after “fiscal year 2000”;

22 (B) in paragraph (2), by inserting “, and  
23 \$25,000,000 for fiscal year 2001 and  
24 \$25,000,000 for fiscal year 2002” after “Act of  
25 1998”;

1 (C) in paragraph (4)—

2 (i) by striking “1999 and” and insert-  
3 ing “1999,”; and

4 (ii) by inserting “, \$10,000,000 for  
5 fiscal year 2001, and \$10,000,000 for fis-  
6 cal year 2002” after “fiscal year 2000”;  
7 and

8 (D) in paragraph (5)—

9 (i) by striking “1999 and” and insert-  
10 ing “1999,”; and

11 (ii) by inserting “, \$5,500,000 for fis-  
12 cal year 2001, and \$5,500,000 for fiscal  
13 year 2002” after “fiscal year 2000”.

14 **SEC. 6. REPORTING REQUIREMENTS.**

15 Section 101 of the High-Performance Computing Act  
16 of 1991 (15 U.S.C. 5511) is amended—

17 (1) in subsection (b)—

18 (A) by redesignating paragraphs (1)  
19 through (5) as subparagraphs (A) through (E),  
20 respectively;

21 (B) by inserting “(1)” after “ADVISORY  
22 COMMITTEE.—”; and

23 (C) by adding at the end the following new  
24 paragraph:

1           “(2) In addition to the duties outlined in paragraph  
2 (1), the advisory committee shall conduct periodic evalua-  
3 tions of the funding, management, implementation, and  
4 activities of the Program, the Next Generation Internet  
5 program, and the Networking and Information Tech-  
6 nology Research and Development program, and shall re-  
7 port not less frequently than once every 2 fiscal years to  
8 the Committee on Science of the House of Representatives  
9 and the Committee on Commerce, Science, and Transpor-  
10 tation of the Senate on its findings and recommendations.  
11 The first report shall be due within 1 year after the date  
12 of the enactment of the Networking and Information  
13 Technology Research and Development Act.”; and

14           (2) in subsection (c)(1)(A) and (2), by inserting  
15           “, including the Next Generation Internet program  
16           and the Networking and Information Technology  
17           Research and Development program” after “Pro-  
18           gram” each place it appears.

19 **SEC. 7. EVALUATION OF CAPABILITIES OF FOREIGN**  
20 **ENCRYPTION.**

21           (a) **STUDY.**—The National Science Foundation shall  
22 undertake a study comparing the availability of encryption  
23 technologies in foreign countries to the encryption tech-  
24 nologies subject to export restrictions in the United  
25 States.

1 (b) REPORT TO CONGRESS.—Not later than 6  
2 months after the date of enactment of this Act, the Na-  
3 tional Science Foundation shall transmit to the Congress  
4 a report on the results of the study undertaken under sub-  
5 section (a).

6 **SEC. 8. RESEARCH CREDIT MADE PERMANENT.**

7 (a) IN GENERAL.—Section 41 of the Internal Rev-  
8 enue Code of 1986 (relating to credit for increasing re-  
9 search activities) is amended by striking subsection (h).

10 (b) CONFORMING AMENDMENT.—Paragraph (1) of  
11 section 45C(b) of such Code is amended by striking sub-  
12 paragraph (D).

13 (c) EFFECTIVE DATE.—The amendments made by  
14 this section shall apply to amounts paid or incurred after  
15 June 30, 1999.

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