TOP500 Supercomputer Sites

Jack J. Dongarra

Computer Science Department
University of Tennessee
Knoxville, TN 37996-1301

and

Mathematical Science Section
Oak Ridge National Laboratory
Oak Ridge, TN 37831-6367

dongarra@cs.utk.edu

Hans W. Meuer

Computing Center
University of Mannheim
D-68131 Mannheim
Germany

meuer@rz.uni-mannheim.de

Erich Strohmaier

Computer Science Department
University of Tennessee
Knoxville, TN 37996-1301

erich@cs.utk.edu

RUM 48/96

November 18, 1996

TOP500 Supercomputer Sites

Jack J. Dongarra, Hans W. Meuer, and Erich Strohmaier

November 18, 1996

Abstract

To provide a better basis for statistics on high-performance computers, we list the sites that have the 500 most powerful computer systems installed. The best LINPACK benchmark performance achieved is used as a performance measure in ranking the computers.

1 Introduction and Objectives

Statistics on high-performance computers are of major interest to manufacturers, users, and potential users. These people wish to know not only the number of systems installed, but also the location of the various supercomputers within the high-performance computing community and the applications for which a computer system is being used. Such statistics can facilitate the establishment of collaborations, the exchange of data and software, and provide a better understanding of the high-performance computer market.

Statistical lists of supercomputers are not new. Every year since 1986 Hans Meuer [1] has published system counts of the major vector computer manufacturers, based principally on those at the Mannheim Supercomputer Seminar. Statistics based merely on the name of the manufacturer are no longer useful, however. New statistics are required that reflect the diversification of supercomputers, the enormous performance difference between low-end and high-end models, the increasing availability of massively parallel processing (MPP) systems, and the strong increase in computing power of the high-end models of workstation suppliers (SMP).

To provide this new statistical foundation, we have decided in 1993 to assemble and maintain a list of the 500 most powerful computer systems. Our list has been compiled twice a year since June 1993 with the help of high-performance computer experts, computational scientists, manufacturers, and the Internet community in general who responded to a questionnaire we sent out; we thank all the contributors for their cooperation.

In the present list (which we call the TOP500), we list computers ranked by their performance on the LINPACK Benchmark. While we make every attempt to verify the results obtained from users and vendors, errors are bound to exist and should be brought to our attention. We intend to continue to update this list half-yearly and, in this way, to keep track with the evolution of computers. Hence, we welcome any comments and information; please send electronic mail to *top500@rz.uni-mannheim.de*. The list is freely available by anonymous ftp to

ftp.uni-mannheim.de/top500/ or to www.netlib.org/benchmark/top500.ps. The interested reader can additionally create sublists out of the TOP500 database and can make statistics on his own by using the WWW interface at
http://parallel.rz.uni-mannheim.de/top500.html or
http://www.netlib.org/benchmark/top500.html.
Here you also have access to postscript versions of slides dealing with the interpretation of the present situation as well as with the evolution over time since we started this project.

2 The LINPACK Benchmark

As a yardstick of performance we are using the "best" performance as measured by the LINPACK Benchmark [2]. LINPACK was chosen because it is widely used and performance numbers are available for almost all relevant systems.

The LINPACK Benchmark was introduced by Jack Dongarra. A detailed description as well as a list of performance results on a wide variety of machines is available in postscript form from *netlib*. To retrieve a copy send electronic mail to *netlib@ornl.gov* and by typing the message *send performance from benchmark* or from any machine on the internet type:
rcp anon@netlib2.cs.utk.edu:benchmark/performance performance.

The benchmark used in the LINPACK Benchmark is to solve a dense system of linear equations. For the TOP500, we used that version of the benchmark that allows the user to scale the size of the problem and to optimize the software in order to achieve the best performance for a given machine. This performance does not reflect the *overall performance* of a given system, as no single number ever can. It does, however, reflect the *performance of a dedicated system for solving a dense system of linear equations.* Since the problem is very regular, the performance achieved is quite high, and the performance numbers give a good correction of peak performance.

By measuring the actual performance for different problem sizes n, a user can get not only the maximal achieved performance R_{max} for the problem size N_{max} but also the problem size $N_{1/2}$ where half of the performance R_{max} is achieved. These numbers together with the theoretical peak performance R_{peak} are the numbers given in the TOP500. In an attempt to obtain uniformity across all computers in performance reporting, the algorithm used in solving the system of equations in the benchmark procedure must confirm to the standard operation count for LU factorization with partial pivoting. In particular, the operation count for the algorithm must be $2/3n^3 + O(n^2)$ floating point operations. This excludes the use of a fast matrix multiply algorithm like "Strassian's Method". This is done to provide a comparable set of performance numbers across all computers. If in the future a more realistic metric finds widespread usage, so that numbers for all systems in question are available, we may convert to that performance measure.

3 The TOP500 List

Table 1 shows the 500 most powerful commercially available computer systems known to us. To keep the list as compact as possible, we show only a part of our information here:

• N_{world}	Position within the TOP500 ranking
• Manufacturer	Manufacturer or vendor
• Computer	Type indicated by manufacturer or vendor
• Installation Site	Customer
• Location	Location and country
• Year	Year of installation/last major update
• Field of Application	
• # Proc.	Number of processors[1]
• R_{max}	Maximal LINPACK performance achieved
• R_{peak}	Theoretical peak performance
• N_{max}	Problemsize for achieving R_{max}
• $N_{1/2}$	Problemsize for achieving half of R_{max}

If R_{max} from Table 3 of the LINPACK Report [2] is not available, we use the TPP performance given in Table 1 of the LINPACK Report [2] for solving a system of 1000 equations. To use a consistent yardstick for all systemwe we do not use results achieved by advanced parallel algorithm as defined in [2]. In case of the Cray T90, C90 and J90 systems we had to use older able 3 or Table 1 results. In a few cases we interpolated between two measured system sizes.

For models where we did not receive the requested data, the performance of the next smaller system measured is used.

If there should be any changes in the performances given in Table 1 we will update them.

In addition to cross checking different sources of information, we select randomly a statistical representative sample of the first 500 systems of our database. For these systems we ask the supplier of the information to establish direct contact between the installation site and us to verify the given information. This gives us basic information about the quality of the list in total.

As the TOP500 should provide a basis for statistics on the market of high-performance computers, we limit the number of systems installed at vendor sites. This is done for each vendor separately by limiting the accumulated performance of systems at vendor sites to a maximum of 5% of the total accumulated installed performance of this vendor. Rounding is done in favor of the vendor in question.

In Table 1, the computers are ordered first by their R_{max} value. In the case of equal performances (R_{max} value) for different computers, we have chosen to order by R_{peak}. For sites that have the same computer, the order is by memory size and then alphabetically.

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
1	Hitachi/Tsukuba CP-PACS/2048	Center for Computational Physics, Univ of Tsukuba Tsukuba Japan /1996	Academic	2048	**368200** 614000	103680 30720
2	Fujitsu Numerical Wind Tunnel	NAL Japan /1996	Research Aerospace	167	**229700** 281000	66132 18018
3	Hitachi SR2201/1024	University of Tokyo Tokyo Japan /1996	Academic	1024	**220400** 307000	138240 34560
4	Intel XP/S140	Sandia National Labs Albuquerque USA /1993	Research	3680	**143400** 184000	55700 20500
5	Intel XP/S-MP 150	Oak Ridge National Laboratory Oak Ridge USA /1995	Research	3072	**127100** 154000	86000 17800
6	Intel XP/S-MP 125	Japan Atomic Energy Research Japan /1996	Research	2502	**103500** 125100	. .
7	Cray T3D MC1024-8	Government USA /1994	Classified	1024	**100500** 152000	81920 10224
8	Fujitsu VPP500/80	National Lab. for High Energy Physics Japan /1994	Research	80	**98900** 128000	32640 10050
9	Fujitsu VPP700/56	Kyushu University Kyushu Japan /1996	Academic	56	**94300** 123200	100280 8280
10	Fujitsu VPP700/46	ECMWF Reading UK /1996	Research Weather	46	**94300** 101200	100280 8280
11	Cray T3E LC256-128	CNRS/IDRIS Orsay France /1996	Research	256	**93200** 154000	53664 11040
12	Cray T3E LC256-128	DOD/CEWES Vicksburg USA /1996	Research Mechanics	256	**93200** 154000	53664 11040
13	Cray T3E LC256-128	Pittsburgh Supercomputer Center Pittsburgh USA /1996	Research	256	**93200** 154000	53664 11040
14	IBM SP2/512	Cornell Theory Center Ithaca USA /1994	Academic	512	**88400** 136000	73500 20150
15	IBM SP2/512	IBM/Poughkeepsie Poughkeepsie USA /1995	Vendor	512	**88400** 136000	73500 20150
16	IBM SP2/384	Maui High-Performance Computing Center (MHPCC) USA /1994	Research	384	**66300** 102400	. .
17	NEC SX-4/32	NEC Fuchu Plant Tokyo Japan /1995	Vendor Benchmarking	32	**60650** 64000	10000 1560
18	NEC SX-4/32	Osaka University Osaka Japan /1996	Academic	32	**60650** 64000	10000 1560
19	NEC SX-4/32	Osaka University Osaka Japan /1996	Academic	32	**60650** 64000	10000 1560
20	NEC SX-4/32	Universitaet Stuttgart Stuttgart Germany /1996	Research	32	**60650** 64000	10000 1560

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
21	TMC CM-5/1056	Los Alamos National Laboratory Los Alamos USA /1993	Research Energy	1056	**59700** 135100	52224 24064
22	Fujitsu VPP500/42	Japan Atomic Energy Research Japan /1994	Research	42	**54500** 67200	. .
23	Fujitsu VPP500/42	Nagoya University Nagoya Japan /1995	Academic	42	**54500** 67200	. .
24	Cray T3E LC136-128	Forschungszentrum Juelich (KFA) Juelich Germany /1996	Research	136	**53100** 81800	. .
25	TMC CM-5/896	Minnesota Supercomputer Center USA /1994	Academic	896	**52300** 114700	. .
26	Fujitsu VPP500/40	National Genetics Research Lab. Japan /1995	Research	40	**52070** 64000	. .
27	Fujitsu VPP500/40	Tokyo University - Inst. of Solid State Physics Tokyo Japan /1994	Academic	40	**52070** 64000	. .
28	Cray T3D MC512-8	Los Alamos National Laboratory Los Alamos USA /1994	Research Energy	512	**50800** 76000	57856 7136
29	Cray T3D MC512-8	Minnesota Supercomputer Center USA /1995	Academic	512	**50800** 76000	57856 7136
30	Cray T3D MC512-8	NASA/Goddard Space Flight Center Greenbelt USA /1996	Research Weather	512	**50800** 76000	57856 7136
31	Cray T3D MC512-8	Pittsburgh Supercomputing Center Pittsburgh USA /1994	Academic	512	**50800** 76000	57856 7136
32	Cray T3D MC512-8	University of Edinburgh Edinburgh UK /1996	Academic	512	**50800** 76000	57856 7136
33	Cray T3E LC128-128	Max-Planck-Gesellschaft MPI/IPP Garching Germany /1996	Research	128	**50430** 77000	58848 7392
34	Cray T3E LC128-256	NERSC/LBNL Berkley USA /1996	Research	128	**50430** 77000	58848 7392
35	Cray T3E LC128-128	United Kingdom Meteorological Office Bracknell UK /1996	Research Weather	128	**50430** 77000	58848 7392
36	Cray T3E LC128-128	Universitaet Stuttgart Stuttgart Germany /1996	Research	128	**50430** 77000	58848 7392
37	IBM SP2/256	Lawrence Livermore National Laboratory Livermore USA /1996	Research Energy	256	**44200** 68000	53000 13500
38	IBM SP2/256	Lawrence Livermore National Laboratory Livermore USA /1996	Research Energy	256	**44200** 68000	53000 13500
39	Fujitsu VPP500/32	The Angstrom Technology Partnership Tsukuba Japan /1993	Research	32	**42400** 51200	20736 4940
40	Fujitsu VPP500/30	Tsukuba University Tsukuba Japan /1993	Research	30	**39812** 48000	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
41	NEC SX-4/20	Japan Marine Science and Technology Japan /1995	Research	20	**38195** 40000	. .
42	NEC SX-4/20	National Research Institute for Metals Japan /1996	Research	20	**38195** 40000	. .
43	NEC SX-4/20	Toyota Central Research Development Japan /1996	Industry Automotive	20	**38195** 40000	. .
44	Fujitsu VPP500/28	Institute of Physical and Chemical Res. (RIKEN) Tokyo Japan /1993	Research	28	**37225** 44800	. .
45	IBM SP2/208	Pacific Northwest Laboratories/Batelle Richland USA /1996	Research	208	**36450** 55000	42200 10300
46	Fujitsu VPP300/16	Japan Atomic Energy Research Japan /1996	Research	16	**34100** 35200	59200 3520
47	Intel XP/S-MP 41	Rome Laboratory USA /1995	Research	816	**33700** 40800	. .
48	NEC SX-4/16	Atmospheric Environment Service (AES) Dorval Canada /1995	Research Weather	16	**30710** 32000	10000 890
49	NEC SX-4/16	National Aerospace Laboratory (NLR) Noordoostpolder Netherlands /1996	Research Aerospace	16	**30710** 32000	10000 890
50	NEC SX-4/16	National Cardiovascular Center Japan /1996	Research	16	**30710** 32000	10000 890
51	NEC SX-4/16	Swiss Scientific Computing Center (CSCS) Manno Switzerland /1996	Research	16	**30710** 32000	10000 890
52	TMC CM-5/512	NCSA Urbana-Champaign USA /1993	Academic	512	**30400** 66000	36864 16384
53	TMC CM-5/512	National Security Agency USA /1993	Classified	512	**30400** 66000	36864 16384
54	Cray Y-MP T932/321024	Nippon Telegraph and Telephone (NTT) Japan /1995	Industry	32	**29360** 58000	. .
55	IBM SP2/160	NASA/Ames Research Center/NAS Moffett Field USA /1994	Research	160	**28700** 42500	42200 10300
56	Hitachi S-3800/480	Hitachi Ltd. GPCD Japan /1994	Vendor Software	4	**28400** 32000	15500 830
57	Hitachi S-3800/480	Japan Meteorological Agency Japan /1995	Research Weather	4	**28400** 32000	15500 830
58	Hitachi S-3800/480	University of Tokyo Tokyo Japan /1993	Academic	4	**28400** 32000	15500 830
59	Fujitsu VPP300/13	Australian National University Canberra Australia /1996	Academic	13	**27720** 28600	. .
60	Cray T3D MC256-8/464	Bear Stearns USA /1996	Industry Finance	256	**25300** 38000	40960 4918

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
61	Cray T3D SC256-8/264	Caltech/JPL Pasadena USA /1994	Academic	256	**25300** 38000	40960 4918
62	Cray T3D MC256-8	Defense Research Agency Farnborough UK /1994	Classified	256	**25300** 38000	40960 4918
63	Cray T3D MC256-8	EXXON USA /1995	Industry Geophysics	256	**25300** 38000	40960 4918
64	Cray T3D MC256-8	Ecole Polytechnique Federale de Lausanne Lausanne Switzerland /1994	Academic	256	**25300** 38000	40960 4918
65	Cray T3D SC256-8/364	Lawrence Livermore National Laboratory Livermore USA /1994	Research Energy	256	**25300** 38000	40960 4918
66	Cray T3D SC256-8/464	Los Alamos National Laboratory Los Alamos USA /1994	Research Energy	256	**25300** 38000	40960 4918
67	Cray T3D SC256-8/464	ZIB/Konrad Zuse-Zentrum fuer Informationstechnik Berlin Germany /1995	Academic	256	**25300** 38000	40960 4918
68	Cray T3E AC64-128	CSC (Center for Scientific Computing) Espoo Finland /1996	Academic	64	**25190** 38000	39936 4896
69	Cray T3E LC64-128	Cray Research USA /1996	Vendor	64	**25190** 38000	39936 4896
70	Cray T3E AC64-128	EDS/General Motors Auburn Hills USA /1996	Industry Automotive	64	**25190** 38000	39936 4896
71	Cray T3E AC64-128	TUD (Technical University Delft) Delft Netherlands /1996	Academic	64	**25190** 38000	39936 4896
72	Cray T3E AC64-128	University of Trondheim Norway /1996	Academic	64	**25190** 38000	39936 4896
73	NEC SX-3/44R	Atmospheric Environment Service (AES) Dorval Canada /1994	Research Weather	4	**23200** 26000	6400 830
74	NEC SX-3/44R	Tohoku University Aramaki Japan /1993	Academic	4	**23200** 26000	6400 830
75	Cray Y-MP T932/20512	NOAA/Geophysical Fluid Dynamics Laboratory (GFDL) Princeton USA /1996	Research Weather	20	**23075** 36250	. .
76	Fujitsu/SNI VPP300/10	Universitaet/Forschungszentrum Karlsruhe Karlsruhe Germany /1996	Academic	10	**22350** 22000	. .
77	Fujitsu VPP500/16	Reactor Nuclear Fuel Development Japan /1996	Research	16	**21700** 25600	14592 3090
78	Hitachi S-3800/380	Hokkaido University Sapporo Japan /1994	Academic	3	**21600** 24000	15680 760
79	Hitachi S-3800/380	Institute for Materials Research/Tohoku University Japan /1994	Academic	3	**21600** 24000	15680 760
80	IBM SP2/110	KTH - Royal Institute of Technology Stockholm Sweden /1996	Research	110	**20370** 29210	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
81	Fujitsu VPP500/15	Kyoto University Kyoto Japan /1994	Academic	15	**20360** 24000	. .
82	NEC SX-3/44	Atmospheric Environment Service (AES) Dorval Canada /1991	Research Weather	4	**20000** 22000	6144 832
83	IBM SP2/104	MCI USA /1994	Industry	104	**19340** 27620	. .
84	Cray T3E AC40-128	University of Texas Austin USA /1996	Academic	40	**18840** 24000	. .
85	Intel XP/S-MP 22	ETH Zuerich Switzerland /1995	Academic	450	**18700** 22500	. .
86	SGI POWER CHALLENGEarray	US Army Research Laboratory Aberdeen USA /1995	Research	96	**18455** 28800	53000 20000
87	IBM SP2/98	Citicorp USA /1996	Industry Finance	98	**18310** 26030	. .
88	IBM SP2/84	Universitaet/Forschungszentrum Karlsruhe Karlsruhe Germany /1996	Academic	84	**17920** 25870	. .
89	NEC SX-3/34R	National Inst. for Molecular Science Okozaki Japan /1993	Research	3	**17400** 19500	6144 691
90	NEC SX-3/34R	VW (Volkswagen AG) Wolfsburg Germany /1996	Industry Automotive	3	**17400** 19500	6144 691
91	IBM SP2/80	Wright Patterson Air Force Base USA /1996	Research	80	**17230** 24630	. .
92	Fujitsu VPP300/8	Nippon University Japan /1996	Academic	8	**17100** 17600	41600 2080
93	Fujitsu/SNI VPP300/8	Universitaet Aachen Aachen Germany /1996	Academic	8	**17100** 17600	41600 2080
94	IBM SP2/85	NIH (National Institute of Health) Frederick USA /1995	Research	85	**16090** 22570	. .
95	SGI POWER CHALLENGEarray	NCSA Urbana-Champaign USA /1996	Research	64	**15598** 23040	37000 8500
96	SGI POWER CHALLENGEarray	Silicon Graphics Cortaillod Switzerland /1995	Vendor Benchmarking	64	**15598** 23040	37000 8500
97	Cray Y-MP T916/12512	Forschungszentrum Juelich (KFA) Juelich Germany /1996	Research	12	**15430** 21750	. .
98	NEC SX-4/8	ATR Optical Communication Lab Japan /1996	Research	8	**15350** 16000	. .
99	NEC SX-4/8	Danish Meteorological Institute Copenhagen Denmark /1996	Research	8	**15350** 16000	. .
100	NEC SX-4/8	German Aerospace Laboratory (DLR) Goettingen Germany /1996	Research Aerospace	8	**15350** 16000	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
101	NEC SX-4/8	National Geographic Agency Japan /1996	Research	8	**15350** 16000	. .
102	IBM SP2/80	National Center for High Performance Computing Taiwan /1996	Academic	80	**15230** 21250	. .
103	Intel XP/S35	Caltech Pasadena USA /1994	Research	512	**15200** 26000	23000 9000
104	Intel XP/S35	Oak Ridge National Laboratory Oak Ridge USA /1992	Research	512	**15200** 26000	23000 9000
105	TMC CM-5/256	Geco-Prakla Houston USA /1994	Industry Geophysics	256	**15100** 33000	26112 12032
106	TMC CM-5/256	Geco-Prakla Houston USA /1995	Industry Geophysics	256	**15100** 33000	26112 12032
107	TMC CM-5/256	Government USA /1993	Classified	256	**15100** 33000	26112 12032
108	TMC CM-5/256	US Naval Research Laboratory Washington D.C. USA /1992	Research	256	**15100** 33000	26112 12032
109	IBM SP2/79	CNUSC Montpellier France /1996	Academic	79	**15060** 20980	. .
110	IBM SP2/78	DKFZ Heidelberg Germany /1996	Research	78	**14890** 20710	. .
111	IBM SP2/77	Leibniz Rechenzentrum Muenchen Germany /1995	Academic	77	**14720** 20450	. .
112	IBM SP2/77	Sears Product Service Group USA /1996	Industry	77	**14720** 20450	. .
113	IBM SP2/77	Sears Roebuck USA /1996	Industry	77	**14720** 20450	. .
114	Hitachi S-3800/280	Central Res. Inst. of Electric Power Ind. Japan /1996	Research	2	**14600** 16000	15680 570
115	IBM SP2/76	SARA (Stichting Academisch Rekencentrum) Amsterdam Netherlands /1995	Research	76	**14550** 20180	. .
116	IBM SP2/75	Atomic Weapons Establishment Aldermaston UK /1996	Classified	75	**14380** 19920	. .
117	Hitachi SR2201/64	Hitachi RCS Ebina Japan /1996	Vendor	64	**14200** 19000	34560 6720
118	Hitachi SR2201/64	Japan Atomic Energy Research Japan /1996	Research	64	**14200** 19000	34560 6720
119	Hitachi SR2201/64	University of Cambridge Cambridge UK /1996	Academic	64	**14200** 19000	34560 6720
120	Intel Delta	Caltech Pasadena USA /1991	Academic	512	**13900** 20480	25000 7500

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
121	IBM SP2/72	Nuclear Power Engineering Japan /1995	Industry Energy	72	**13860** 19120	. .
122	Cray Y-MP C916/16512	Cray Research Eagan USA /1992	Vendor	16	**13700** 15238	10000 650
123	Cray Y-MP C916/16256	DKRZ Hamburg Germany /1995	Research Weather	16	**13700** 15238	10000 650
124	Cray Y-MP C916/161024	DOD/CEWES Vicksburg USA /1994	Research Mechanics	16	**13700** 15238	10000 650
125	Cray Y-MP C916/16256	DOE/Bettis Atomic Power Laboratory USA /1993	Research	16	**13700** 15238	10000 650
126	Cray Y-MP C916/16256	DOE/Knolls Atomic Power Laboratory USA /1993	Research	16	**13700** 15238	10000 650
127	Cray Y-MP C916/16512	DOE/National Security Agency USA /1994	Classified	16	**13700** 15238	10000 650
128	Cray Y-MP C916/16256	ECMWF Reading UK /1994	Research Weather	16	**13700** 15238	10000 650
129	Cray Y-MP C916/16512	Ford Motor Company Dearborn USA /1993	Industry Automotive	16	**13700** 15238	10000 650
130	Cray Y-MP C916/16512	Ford Motor Company Dearborn USA /1995	Industry Automotive	16	**13700** 15238	10000 650
131	Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
132	Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
133	Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
134	Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
135	Cray Y-MP C916/16512	Government USA /1994	Classified	16	**13700** 15238	10000 650
136	Cray Y-MP C916/16256	Government Communications Headquarters Benhall UK /1994	Classified	16	**13700** 15238	10000 650
137	Cray Y-MP C916/16512	KIST/System Engineering Research Institute Korea /1993	Academic	16	**13700** 15238	10000 650
138	Cray Y-MP C916/161024	MITI Osaka Japan /1994	Research	16	**13700** 15238	10000 650
139	Cray Y-MP C916/161024	NASA/Ames Research Center/NAS Moffett Field USA /1993	Research	16	**13700** 15238	10000 650
140	Cray Y-MP C916/16256	NERSC/LBNL Berkley USA /1992	Research	16	**13700** 15238	10000 650

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
141	Cray Y-MP C916/16256	NOAA/Geophysical Fluid Dynamics Laboratory (GFDL) Princeton USA /1995	Research Weather	16	**13700** 15238	10000 650
142	Cray Y-MP C916/16256	NOAA/National Centers for Environment Prediction Suitland USA /1994	Research	16	**13700** 15238	10000 650
143	Cray Y-MP C916/16512	Pittsburgh Supercomputing Center Pittsburgh USA /1994	Academic	16	**13700** 15238	10000 650
144	Cray Y-MP C916/16256	Res. Inf. Processing System (RIPS) Tsukuba Japan /1994	Research	16	**13700** 15238	10000 650
145	Cray Y-MP C916/161024	Tohoku University, Institute of Fluid Science Aramaki Japan /1994	Academic	16	**13700** 15238	10000 650
146	Cray Y-MP C916/161024	US Naval Oceanographic Command Bay Saint Louis USA /1994	Research Weather	16	**13700** 15238	10000 650
147	Cray Y-MP C916/16256	United Kingdom Meteorological Office Bracknell UK /1994	Research Weather	16	**13700** 15238	10000 650
148	Cray Y-MP C916/161024	Wright Patterson Air Force Base USA /1996	Research	16	**13700** 15238	10000 650
149	Fujitsu VPP500/10	Communications Res. Lab. (CRL) Tokyo Japan /1993	Research	10	**13675** 16000	. .
150	IBM SP2/69	PIK Potsdam Germany /1996	Research	69	**13350** 18320	. .
151	IBM SP2/68	DLR Koeln Germany /1996	Research	68	**13180** 18060	. .
152	Cray Y-MP T932/101024	EDS/General Motors Auburn Hills USA /1996	Industry Automotive	10	**13150** 18125	. .
153	IBM SP2/67	Bell South USA /1995	Industry	67	**13010** 17790	. .
154	Fujitsu VPP300/6	Meiji University Japan /1996	Academic	6	**12850** 13200	. .
155	Fujitsu/SNI VPP300/6	Universitaet Darmstadt Darmstadt Germany /1996	Academic	6	**12850** 13200	. .
156	Cray T3D MC128-8	Air Force/Eglin Air Force Base Eglin USA /1994	Classified	128	**12800** 19000	20736 3408
157	Cray T3D MC128-8	CEA/Centre d'Etudes Limeil-Valenton France /1993	Research	128	**12800** 19000	20736 3408
158	Cray T3D MCA128-8	CEA/Centre d'Etudes Nucleaires Grenoble France /1994	Research Energy	128	**12800** 19000	20736 3408
159	Cray T3D MC128-8	CINECA Bologna Italy /1996	Research	128	**12800** 19000	20736 3408
160	Cray T3D MCA128-8	CNRS/IDRIS Orsay France /1995	Research	128	**12800** 19000	20736 3408

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
161	Cray T3D MCA128-8	Compagnie Generale de Geophysique (CGG) Massy France /1995	Industry Geophysics	128	**12800** 19000	20736 3408
162	Cray T3D MC128-8	Cray Research Eagan USA /1995	Vendor	128	**12800** 19000	20736 3408
163	Cray T3D MCA128-8	Cray Research Eagan USA /1996	Vendor	128	**12800** 19000	20736 3408
164	Cray T3D MCA128-8	ECMWF Reading UK /1994	Research Weather	128	**12800** 19000	20736 3408
165	Cray T3D MCA128-8	Environmental Protection Agency USA /1995	Research	128	**12800** 19000	20736 3408
166	Cray T3D MCA128-8	Max-Planck-Gesellschaft MPI Munchen Germany /1995	Research	128	**12800** 19000	20736 3408
167	Cray T3D MC128-8	Phillips Petroleum Company Bartlesville USA /1994	Industry Geophysics	128	**12800** 19000	20736 3408
168	Cray T3D MCA128-2	Reactor Nuclear Fuel Development Japan /1994	Research	128	**12800** 19000	20736 3408
169	Cray T3D MCA128-8	Tohoku University, Institute of Fluid Science Aramaki Japan /1994	Academic	128	**12800** 19000	20736 3408
170	Cray T3D MCA128-8	UCSD/San Diego Supercomputer Center San Diego USA /1995	Academic	128	**12800** 19000	20736 3408
171	Cray T3D MC128-8	University of Alaska - ARSC Fairbanks USA /1995	Academic	128	**12800** 19000	20736 3408
172	IBM SP2/65	CERN Geneva Switzerland /1995	Research	65	**12670** 17260	. .
173	Cray T3E AC32-128	NCSC USA /1996	Research	32	**12500** 19000	27936 3360
174	IBM SP2/64	InterUniversity Israel /1996	Academic	64	**12500** 17000	26500 7000
175	IBM SP2/64	Maui High-Performance Computing Center (MHPCC) USA /1994	Research	64	**12500** 17000	26500 7000
176	IBM SP2/64	University of Houston USA /1996	Academic	64	**12500** 17000	26500 7000
177	Intel XP/S-MP 15	ONERA Chatillon France /1995	Research Aerospace	294	**12250** 14700	. .
178	Intel XP/S-MP 14	Oak Ridge National Laboratory Oak Ridge USA /1995	Research	288	**12000** 14400	. .
179	Intel XP/S30	UCSD/San Diego Supercomputer Center San Diego USA /1993	Academic	400	**11900** 20000	. .
180	IBM SP2/60	Tokyo Metropolitan University Tokyo Japan /1995	Academic	60	**11750** 15930	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
181	NEC SX-3/24R	National Institute of Fusion Science (NIFS) Japan /1993	Research	2	**11600** 13000	4352 516
182	NEC SX-3/24R	Swiss Scientific Computing Center (CSCS) Manno Switzerland /1994	Research	2	**11600** 13000	4352 516
183	NEC SX-4/6	DIGICON Montreal Canada /1996	Industry Geophysics	6	**11510** 12000	. .
184	Cray Y-MP T916/8256	CEA (Commissariat a l'Energie Atomique) Limeil France /1996	Research	8	**10880** 14500	. .
185	Cray Y-MP T916/8512	Chrysler Motors Company USA /1996	Industry Automotive	8	**10880** 14500	. .
186	Fujitsu VPP300/5	Fujitsu San Jose USA /1996	Vendor	5	**10720** 11000	. .
187	IBM SP2/54	Autozone Memphis USA /1995	Industry Database	54	**10640** 14340	. .
188	Hewlett-Packard SPP1600/XA-64	Hewlett-Packard CXTC Richardson USA /1996	Vendor Benchmarking	64	**10402** 15360	. .
189	Cray Y-MP C916/12256	Tokyo Institute of Technology Tokyo Japan /1995	Academic	12	**10270** 11430	. .
190	IBM SP2/51	Shell Intl. Petroleum Netherlands /1996	Industry Geophysics	51	**10090** 13540	. .
191	Intel XP/S25	NAL Japan /1994	Research	336	**10000** 16800	. .
192	Intel XP/S25	NRAD USA /1994	Research	336	**10000** 16800	. .
193	IBM SP2/50	Deutsche Telekom AG Germany /1996	Industry Database	50	**9900** 13280	. .
194	IBM SP2/50	Federal Express USA /1995	Industry	50	**9900** 13280	. .
195	IBM SP2/50	Nihon Genken Tokai Japan /1995	Research	50	**9900** 13280	. .
196	TMC CM-200/64k	Los Alamos National Laboratory Los Alamos USA / .	Research Energy	2048	**9800** 20000	29696 11264
197	TMC CM-200/64k	Los Alamos National Laboratory Los Alamos USA / .	Research Energy	2048	**9800** 20000	29696 11264
198	Fujitsu VPP500/7	Institute of Space Astronautical Science (ISAS) Tokyo Japan /1993	Research	7	**9650** 11200	. .
199	IBM SP2/48	Ensign UK /1996	Industry Geophysics	48	**9530** 12750	. .
200	IBM SP2/48	Institute of Math and Statistics Japan /1995	Research	48	**9530** 12750	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
201	IBM SP2/48	NASA/Langley Research Center Hampton USA /1994	Research	48	**9530** 12750	. .
202	IBM SP2/48	Okazaki Bunshi Ken Japan /1994	Research	48	**9530** 12750	. .
203	IBM SP2/48	PCS Inc USA /1996	Industry	48	**9530** 12750	. .
204	IBM SP2/48	Rika dai Japan /1996	Academic	48	**9530** 12750	. .
205	IBM SP2/48	University of Michigan Michigan USA /1996	Academic	48	**9530** 12750	. .
206	Cray T3E AC24-128	TU Berlin Berlin Germany /1996	Research	24	**9420** 14400	. .
207	SGI POWER CHALLENGEarray	Government USA /1995	Classified	40	**9398** 14400	27000 6775
208	SGI POWER CHALLENGEarray	Government USA /1995	Classified	40	**9398** 14400	27000 6775
209	IBM SP2/46	Tohoku University, Kohgaku-bu Aramaki Japan /1996	Academic	46	**9160** 12210	. .
210	IBM SP2/44	C4 / Centre de Computacio i Comunicacions de Catal Barcelona Spain /1996	Academic	44	**8790** 11680	. .
211	SGI ORIGIN 2000	NCSA Urbana-Champaign USA /1996	Research	128	**8757** 49920	16000 4000
212	SGI ORIGIN 2000	Boston University Boston USA /1996	Academic	32	**8757** 12480	16000 4000
213	SGI ORIGIN 2000	US Naval Research Laboratory Washington D.C. USA /1996	Research	32	**8757** 12480	16000 4000
214	Fujitsu VX/4	Fujitsu Uxbridge UK /1996	Vendor	4	**8600** 8800	28800 1280
215	Fujitsu/SNI VPP300/4	Universitaet Hannover Hannover Germany /1996	Academic	4	**8600** 8800	28800 1280
216	Fujitsu VPP300/4	Western Geophysical Houston USA /1996	Industry Geophysics	4	**8600** 8800	28800 1280
217	IBM SP2/42	Chuodai Riko Japan /1996	Academic	42	**8420** 11150	. .
218	IBM SP2/42	Federal Express USA /1996	Industry	42	**8420** 11150	. .
219	IBM SP2/42	Fidelity Investments USA /1995	Industry	42	**8420** 11150	. .
220	Cray Y-MP T916/6512	DOD/NAVO USA /1996	Classified	8	**8300** 10850	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
221	SGI POW CHALLarray 10000	NCSA Urbana-Champaign USA /1996	Research	72	**8233** 28080	. .
222	SGI POWER CHALLENGE 10000	Biomolecular Eng. Research Institute Suita Japan /1996	Research	32	**8233** 12480	16000 4000
223	IBM SP2/41	ISSC, Unisource USA /1996	Industry	41	**8230** 10890	. .
224	IBM SP2/41	Petro Canada Canada /1995	Industry Geophysics	41	**8230** 10890	. .
225	IBM SP2/36	Western Geophysical UK /1996	Industry Geophysics	36	**8200** 11090	. .
226	IBM SP2/40	National Cancer Research Institute Tokyo Japan /1994	Research	40	**8050** 10620	. .
227	IBM SP2/40	Seoul National University Seoul Korea /1995	Academic	40	**8050** 10620	. .
228	IBM SP2/40	UNI-C/Lyngby Denmark /1995	Academic	40	**8050** 10620	. .
229	IBM SP2/40	Western Geophysical UK /1996	Industry Geophysics	40	**8050** 10620	. .
230	Parsytec GC PowerPlus/192	Universitaet Heidelberg - IWR Heidelberg Germany /1995	Academic	192	**7999** 15360	27192 9500
231	Parsytec GC PowerPlus/192	Universitaet Paderborn - PC2 Paderborn Germany /1995	Academic	192	**7999** 15360	27192 9500
232	IBM SP2/35	ARAMCO Saudi Arabia /1996	Industry Geophysics	35	**7970** 10780	. .
233	Hewlett-Packard SPP1600/XA-48	Universitaet Erlangen Erlangen Germany /1996	Academic	48	**7920** 11520	. .
234	Fujitsu VPP500/6	Fujitsu Ltd. Numazu Japan /1996	Vendor	6	**7900** 9600	. .
235	SGI POWER CHALLENGEarray	Government USA /1995	Classified	40	**7831** 12000	27000 6775
236	SGI POWER CHALLENGEarray	Government USA /1995	Classified	40	**7831** 12000	27000 6775
237	SGI POWER CHALLENGEarray	Government USA /1995	Classified	40	**7831** 12000	27000 6775
238	Hewlett-Packard Exemplar S-Class	Defense Contractor USA /1996	Industry Aerospace	16	**7783** 11500	13320 1044
239	Hewlett-Packard Exemplar S-Class	Defense Contractor USA /1996	Industry Aerospace	16	**7783** 11500	13320 1044
240	Hewlett-Packard Exemplar S-Class	Defense Contractor USA /1996	Industry Aerospace	16	**7783** 11500	13320 1044

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
241	Hewlett-Packard Exemplar S-Class	Defense Contractor USA /1996	Industry Aerospace	16	**7783** 11500	13320 1044
242	Hewlett-Packard Exemplar S-Class	Defense Contractor USA /1996	Industry Aerospace	16	**7783** 11500	13320 1044
243	Hewlett-Packard Exemplar S-Class	Hewlett-Packard CXTC Richardson USA /1996	Vendor Benchmarking	16	**7783** 11500	13320 1044
244	Hewlett-Packard Exemplar S-Class	NCSA Urbana-Champaign USA /1996	Academic	16	**7783** 11500	13320 1044
245	Hewlett-Packard Exemplar S-Class	Universitaet Leipzig Leipzig Germany /1996	Academic	16	**7783** 11500	13320 1044
246	Hewlett-Packard Exemplar S-Class	Universitaet Leipzig Leipzig Germany /1996	Academic	16	**7783** 11500	13320 1044
247	TMC CM-5E/128	The Angstrom Technology Partnership Tsukuba Japan /1994	Research	128	**7700** 20000	18432 8192
248	TMC CM-5/128	American Express USA /1993	Industry	128	**7700** 16000	18432 8192
249	TMC CM-5/128	Government USA /1993	Classified	128	**7700** 16000	18432 8192
250	TMC CM-5/128	Institut de Physique du Globe de Paris (IPG) Paris France /1992	Research	128	**7700** 16000	18432 8192
251	TMC CM-5/128	JPL Pasadena USA /1995	Research	128	**7700** 16000	18432 8192
252	TMC CM-5/128	MIT Cambridge USA / .	Research	128	**7700** 16000	18432 8192
253	IBM SP2/38	GMD Germany /1995	Research	38	**7680** 10090	. .
254	IBM SP2/38	Kirin Beer Japan /1996	Industry	38	**7680** 10090	. .
255	IBM SP2/38	UCLA Los Angeles USA /1994	Academic	38	**7680** 10090	. .
256	NEC SX-4/4	Houston Area Research Center Houston USA /1996	Research	4	**7670** 8000	. .
257	Intel XP/S20	Okayama University Okayama Japan /1994	Academic	256	**7600** 12800	16000 4000
258	Intel XP/S20	Wright Patterson Air Force Base USA /1994	Research	256	**7600** 12800	16000 4000
259	SGI POWER CHALLENGEarray	INRIA - Sophia Antipolis Rennes France /1995	Research	32	**7542** 11520	22000 5600
260	SGI POWER CHALLENGEarray	NASA/Ames Mountain View USA /1995	Research Aerospace	32	**7542** 11520	22000 5600

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
261	SGI POWER CHALLENGEarray	NASA/JPL Pasadena USA /1995	Academic	32	**7542** 11520	22000 5600
262	IBM SP2/37	American Express USA /1995	Industry Finance	37	**7490** 9820	. .
263	SGI POWER CHALLENGEarray	Boston University Boston USA /1995	Academic	38	**7445** 11400	27000 6775
264	Hewlett-Packard SPP1200/XA-64	NCSA Urbana-Champaign USA /1995	Academic	64	**7408** 15360	42000 .
265	Hitachi S-3800/180	Meteorological Research Institute Japan /1993	Research Weather	1	**7400** 8000	15680 470
266	IBM SP2/36	Rensselaer Polytechnic Troy USA /1994	Academic	36	**7310** 9560	. .
267	IBM SP2/36	Telecom Denmark (Danadata) Denmark /1996	Industry Database	36	**7310** 9560	. .
268	IBM SP2/32	HMC Korea /1996	Industry	32	**7300** 9860	19500 3500
269	IBM SP2/32	Kogiin Kagiken Japan /1996	Research	32	**7300** 9860	19500 3500
270	SGI ORIGIN 2000	Baylor College of Medicine Houston USA /1996	Academic	24	**7213** 9360	15000 3500
271	IBM SP2/35	MCI USA /1995	Industry	35	**7120** 9290	. .
272	IBM SP2/35	Phillipps University of Marburg Marburg Germany /1995	Academic	35	**7120** 9290	. .
273	IBM SP2/35	Shell KSEPL Netherlands /1996	Industry Geophysics	35	**7120** 9290	. .
274	IBM SP2/35	Shopko Stores USA /1996	Industry	35	**7120** 9290	. .
275	IBM SP2/35	State Farm USA /1996	Industry	35	**7120** 9290	. .
276	Hitachi S-3800/260	Suzuki Motor Japan /1993	Industry Automotive	2	**7100** 8000	. .
277	Cray Y-MP C98/8256	BMW AG Muenchen Germany /1995	Industry Automotive	8	**6850** 7619	. .
278	Cray Y-MP C98/8512	CNRS/IDRIS Orsay France /1993	Research	8	**6850** 7619	. .
279	Cray Y-MP C98/8256	Chrysler Motors Company USA /1996	Industry Automotive	8	**6850** 7619	. .
280	Cray Y-MP C98/8256	Direction de la Meteorologie Nationale Toulouse France /1994	Research Weather	8	**6850** 7619	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
281	Cray Y-MP C98/81024	EDS/General Motors Auburn Hills USA /1995	Industry Automotive	8	**6850** 7619	. .
282	Cray Y-MP C98/8512	Electricite de France Clamart France /1994	Industry Energy	8	**6850** 7619	. .
283	Cray Y-MP C916/8512	Ford Koeln Germany /1995	Industry Automotive	8	**6850** 7619	. .
284	Cray Y-MP C916/8512	Minnesota Supercomputer Center USA /1994	Academic	8	**6850** 7619	. .
285	Cray Y-MP C916/8256	NASA/Ames Research Center/CCF Moffett Field USA /1993	Research Aerospace	8	**6850** 7619	. .
286	Cray Y-MP C98/8128	UCSD/San Diego Supercomputer Center San Diego USA /1993	Academic	8	**6850** 7619	. .
287	Cray Y-MP C916/8256	US Navy/Fleet Numerical Oceanography Center Monterey USA /1994	Research Weather	8	**6850** 7619	. .
288	SGI POWER CHALLENGE 10000	Audi AG Ludwigshafen Germany /1996	Industry Automotive	24	**6819** 9360	15000 3500
289	SGI POW CHALLarray 10000	C4 / Centre Europeo del Parallelismo de Barcelona Barcelona Spain /1996	Academic	24	**6819** 9360	15000 3500
290	SGI POWER CHALLENGE 10000	Dream Quest Simi Valley USA /1996	Industry Image Proc.	24	**6819** 9360	15000 3500
291	SGI POWER CHALLENGE 10000	Government McLean USA /1996	Classified	24	**6819** 9360	15000 3500
292	SGI POWER CHALLENGE 10000	NCSA Urbana-Champaign USA /1996	Research	24	**6819** 9360	15000 3500
293	SGI POWER CHALLENGE 10000	Silicon Graphics Mountain View USA /1996	Vendor Benchmarking	24	**6819** 9360	15000 3500
294	IBM SP2/33	American Express USA /1996	Industry Finance	33	**6750** 8760	. .
295	IBM SP2/33	Westinghouse Electric USA /1996	Industry Energy	33	**6750** 8760	. .
296	Digital AlphaServer 8400 5/440	Digital Equipment Corporation Maynard USA /1996	Vendor Benchmarking	12	**6654** 10488	. .
297	IBM SP2/32	Amerada Hess USA /1994	Industry	32	**6569** 8500	28000 5200
298	IBM SP2/32	CINECA Bologna Italy /1995	Research	32	**6569** 8500	28000 5200
299	IBM SP2/32	China Meterological Administration China /1995	Research	32	**6569** 8500	28000 5200
300	IBM SP2/32	Clam Associates Inc USA /1996	Industry	32	**6569** 8500	28000 5200

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
301	IBM SP2/32	First Union National Bank USA /1996	Industry Finance	32	**6569** 8500	28000 5200
302	IBM SP2/32	Hong Kong University Hong Kong Hong Kong /1995	Academic	32	**6569** 8500	28000 5200
303	IBM SP2/32	Informix USA /1995	Industry Database	32	**6569** 8500	28000 5200
304	IBM SP2/32	Oracle Corporation Redwood Shores USA /1996	Industry Database	32	**6569** 8500	28000 5200
305	IBM SP2/32	PGS Tensor USA /1995	Industry	32	**6569** 8500	28000 5200
306	Fujitsu VX/3	Waseda University Japan /1996	Academic	3	**6450** 6600	. .
307	Cray T3D MCA64-8	Centro Di Calcolo Interuniversiatrio Dell Italia Italy /1996	Academic	64	**6400** 9600	20736 2368
308	Cray T3D MC64-2	Mitsubishi Electric Corporation Kanagawa Japan /1994	Industry Electronics	64	**6400** 9600	20736 2368
309	Cray T3D MCA64-8	Mobil / Technical Center Tulsa USA /1995	Industry Geophysics	64	**6400** 9600	20736 2368
310	Cray T3D MCA64-8	NASA/Lewis Research Center Cleveland USA /1994	Research	64	**6400** 9600	20736 2368
311	Cray T3D MCA64-8	NCAR (National Center for Atmospheric Research) Boulder USA /1994	Research Weather	64	**6400** 9600	20736 2368
312	Cray T3D MCA64-8	US Naval Underwater Weapons Center USA /1995	Classified	64	**6400** 9600	20736 2368
313	IBM SP2/28	Inf E. Corte Ingles Spain /1996	Industry Database	28	**6400** 8620	. .
314	IBM SP2/31	NIST - US Department of Commerce Gaithersburg USA /1994	Research	31	**6370** 8230	. .
315	Cray T3E AC16-128	Cray Research USA /1996	Vendor	16	**6340** 9600	19968 2208
316	Cray T3E AC16-128	Max-Planck-Gesellschaft MPI/Festkoerperforschung Stuttgart Germany /1996	Research	16	**6340** 9600	19968 2208
317	Cray T3E AC16-128	Max-Planck-Gesellschaft MPI/Fritz-Haber-Institut Berlin Germany /1996	Research	16	**6340** 9600	19968 2208
318	Cray T3E AC16-128	Max-Planck-Gesellschaft MPI/Polymerforschung Mainz Germany /1996	Research	16	**6340** 9600	19968 2208
319	Cray T3E AC16-128	Max-Planck-Gesellschaft MPI/Stroemungsforschung Goettingen Germany /1996	Research	16	**6340** 9600	19968 2208
320	Cray T3E AC16-128	Rechenzentrum Hannover Germany /1996	Research	16	**6340** 9600	19968 2208

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
321	Cray T3E AC16-128	Universitaet Rostock Germany /1996	Research	16	**6340** 9600	19968 2208
322	Intel XP/S15	Government Washington DC USA /1995	Classified	208	**6250** 10400	. .
323	Intel XP/S15	NOAA Boulder USA /1994	Research	208	**6250** 10400	. .
324	Hewlett-Packard SPP1000/XA-64	HTC Babelsberg Germany /1995	Industry	64	**6192** 12800	41000 11400
325	Hewlett-Packard SPP1000/XA-64	Josef Stefan Institut Ljubljana Slovenia /1994	Research	64	**6192** 12800	41000 11400
326	IBM SP2/30	CRS4 Cagliari Italy /1995	Research	30	**6170** 7970	. .
327	IBM SP2/30	Columbia University Lamont USA /1995	Academic	30	**6170** 7970	. .
328	IBM SP2/30	First Interstate Bank USA /1996	Industry	30	**6170** 7970	. .
329	IBM SP2/30	Informix USA /1995	Industry Database	30	**6170** 7970	. .
330	IBM SP2/30	Shell KSEPL Netherlands /1995	Industry Geophysics	30	**6170** 7970	. .
331	IBM SP2/30	Shell KSLA Netherlands /1995	Industry Geophysics	30	**6170** 7970	. .
332	IBM SP2/30	Shell Oil Corporation USA /1994	Industry Geophysics	30	**6170** 7970	. .
333	IBM SP2/30	Shell Oil Corporation USA /1994	Industry Geophysics	30	**6170** 7970	. .
334	IBM SP2/30	Universitaet Stuttgart Stuttgart Germany /1996	Academic	30	**6170** 7970	. .
335	IBM SP2/30	World Com USA /1995	Industry	30	**6170** 7970	. .
336	SGI POWER CHALLENGE 10000	Lockheed Martin Littleton USA /1996	Industry Aerospace	28	**6118** 10920	15000 3100
337	SGI POWER CHALLENGE 10000	AMOCO Tulsa USA /1996	Industry Geophysics	24	**6118** 9360	15000 3100
338	SGI POWER CHALLENGE 10000	BMW AG Muenchen Germany /1996	Industry Automotive	24	**6118** 9360	15000 3100
339	SGI POWER CHALLENGE 10000	BMW AG Muenchen Germany /1996	Industry Automotive	24	**6118** 9360	15000 3100
340	SGI POWER CHALLENGE 10000	BMW AG Muenchen Germany /1996	Industry Automotive	24	**6118** 9360	15000 3100

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $world$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
341	SGI POWER CHALLENGE 10000	BMW AG Muenchen Germany /1996	Industry Automotive	24	**6118** 9360	15000 3100
342	SGI POWER CHALLENGE 10000	Chevron La Habra USA /1996	Industry Geophysics	24	**6118** 9360	15000 3100
343	SGI POWER CHALLENGE 10000	Heriot Watt University UK /1996	Academic	24	**6118** 9360	15000 3100
344	SGI POWER CHALLENGE 10000	NIH (National Institute of Health) Frederick USA /1996	Research	24	**6118** 9360	15000 3100
345	SGI POWER CHALLENGE 10000	Oxford University Oxford UK /1996	Academic	24	**6118** 9360	15000 3100
346	SGI POWER CHALLENGE 10000	Sikorsky Stratford USA /1996	Industry Aerospace	24	**6118** 9360	15000 3100
347	SGI POWER CHALLENGE 10000	Texas AM University College Station USA /1996	Academic	24	**6118** 9360	15000 3100
348	SGI POWER CHALLENGE 10000	US Army TACOM Warren USA /1996	Classified	24	**6118** 9360	15000 3100
349	SGI POWER CHALLENGE 10000	University of Maryland Baltimore USA /1996	Academic	24	**6118** 9360	15000 3100
350	SGI POWER CHALLENGE 10000	Volvo Gothenberg Sweden /1996	Industry Automotive	24	**6118** 9360	15000 3100
351	IBM SP2/29	Deluxe Check USA /1996	Industry	29	**5970** 7710	. .
352	IBM SP2/29	Shell Netherlands /1996	Industry Geophysics	29	**5970** 7710	. .
353	SGI POWER CHALLENGE 10000	Australian National University Canberra Australia /1996	Academic	20	**5872** 7800	15000 3000
354	SGI POWER CHALLENGE 10000	Defence Science Organization Singapore /1996	Classified	20	**5872** 7800	15000 3000
355	SGI POWER CHALLENGE 10000	Dream Quest Simi Valley USA /1996	Industry Image Proc.	20	**5872** 7800	15000 3000
356	SGI POWER CHALLENGE 10000	KLA Instruments Semiconductor San Jose USA /1996	Industry Electronics	20	**5872** 7800	15000 3000
357	SGI POWER CHALLENGE 10000	New South Wales Center for Par. Comp. Sydney Australia /1996	Academic	20	**5872** 7800	15000 3000
358	SGI POWER CHALLENGE 10000	South Australian Center for Par. Comp. Adelaide Australia /1996	Academic	20	**5872** 7800	15000 3000
359	SGI POWER CHALLENGE 10000	Technische Universitaet Wien Wien Austria /1996	Academic	20	**5872** 7800	15000 3000
360	SGI POWER CHALLENGE 10000	Technische Universitaet Wien Wien Austria /1996	Academic	20	**5872** 7800	15000 3000

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
361	SGI POWER CHALLENGE 10000	US Air Force/National Test Facility Falcon USA /1996	Classified	20	**5872** 7800	15000 3000
362	SGI POWER CHALLENGE 10000	University of Minnesota Minneapolis USA /1996	Academic	20	**5872** 7800	15000 3000
363	SGI POWER CHALLENGE 10000	Georgia Institute of Technology Atlanta USA /1996	Research	22	**5812** 8580	15000 2900
364	Intel XP/S14	Grant Tensor Houston USA /1995	Industry Geophysics	192	**5800** 9600	. .
365	NEC SX-3/41R	Japan Atomic Energy Research Japan /1992	Research	4	**5800** 6400	3584 414
366	NEC SX-3/14R	Toyota Central Research Development Japan /1992	Industry Automotive	1	**5800** 6400	2816 282
367	Cray Y-MP J932/32-4096	Bayer AG Leverkusen Germany /1996	Industry Chemistry	32	**5800** 6400	10000 550
368	Cray Y-MP J932/32-8192	Cray Research Eagan USA /1995	Vendor	32	**5800** 6400	10000 550
369	Cray Y-MP J932/32-8192	Lockheed Missiles and Space Company USA /1996	Industry Aerospace	32	**5800** 6400	10000 550
370	Cray Y-MP J932/32-8192	Los Alamos National Laboratory Los Alamos USA /1996	Research Energy	32	**5800** 6400	10000 550
371	Cray Y-MP J932/32-4096	NASA/Goddard Space Flight Center Greenbelt USA /1995	Research Weather	32	**5800** 6400	10000 550
372	Cray Y-MP J932/32-4096	NASA/Goddard Space Flight Center Greenbelt USA /1996	Research Weather	32	**5800** 6400	10000 550
373	Cray Y-MP J932/32-8192	NERSC/LBNL Berkley USA /1996	Research	32	**5800** 6400	10000 550
374	Cray Y-MP J932/32-8192	NERSC/LBNL Berkley USA /1996	Research	32	**5800** 6400	10000 550
375	Cray Y-MP J932/32-8192	NERSC/LBNL Berkley USA /1996	Research	32	**5800** 6400	10000 550
376	Cray Y-MP J932/32-4096	Rutherford Appleton Laboratory UK /1996	Research	32	**5800** 6400	10000 550
377	Cray Y-MP J932/32-4096	University Groningen Groningen Netherlands /1996	Academic	32	**5800** 6400	10000 550
378	IBM SP2/28	ABSA South Africa /1996	Industry Database	28	**5780** 7450	. .
379	IBM SP2/28	L.L.Bean USA /1994	Industry	28	**5780** 7450	. .
380	IBM SP2/28	Loral USA /1994	Industry	28	**5780** 7450	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
381	IBM SP2/28	Morgan Stanley USA /1995	Industry	28	**5780** 7450	. .
382	IBM SP2/28	US West USA /1996	Industry	28	**5780** 7450	. .
383	IBM SP2/28	University of Southern California Los Angeles USA /1996	Academic	28	**5780** 7450	. .
384	Hewlett-Packard SPP1200/XA-48	Universitaet Mainz Mainz Germany /1995	Academic	48	**5744** 11520	34000 .
385	Cray Y-MP T94/4128	Boeing Seattle USA / .	Industry Aerospace	4	**5735** 7200	. .
386	Cray Y-MP T94/4128	Cray Research Eagan USA /1995	Vendor	4	**5735** 7200	. .
387	Cray Y-MP T94/4128	Cray Research Eagan USA /1995	Vendor	4	**5735** 7200	. .
388	Cray Y-MP T94/4128	Ford Motor Company Dearborn USA /1995	Industry Automotive	4	**5735** 7200	. .
389	Cray Y-MP T94/4128	Government Colorado Springs USA /1995	Classified	4	**5735** 7200	. .
390	Cray Y-MP T94/4128	Government Colorado Springs USA /1995	Classified	4	**5735** 7200	. .
391	Cray Y-MP T94/4128	Japan Atomic Energy Research Japan /1996	Research	4	**5735** 7200	. .
392	Cray Y-MP T94/4128	Leibniz Rechenzentrum Muenchen Germany /1996	Academic	4	**5735** 7200	. .
393	Cray Y-MP T94/4128	Los Alamos National Laboratory Los Alamos USA /1995	Research Energy	4	**5735** 7200	. .
394	Cray Y-MP T916/4256	NASA/Marshall Space Flight Center Huntsville USA /1996	Research Aerospace	4	**5735** 7200	. .
395	Cray Y-MP T916/4256	North Carolina Supercomputer Center USA /1995	Academic	4	**5735** 7200	. .
396	Cray Y-MP T94/464	Toyota Motor Company Japan /1995	Industry Automotive	4	**5735** 7200	. .
397	TMC CM-5/96	Epsilon USA /1993	Industry	96	**5700** 13370	. .
398	TMC CM-5/96	University of California at Berkeley USA / .	Academic	96	**5700** 13370	. .
399	SGI POWER CHALLENGEarray	University Jaume I Castellon Spain /1995	Academic	24	**5650** 8640	. .
400	SGI POWER CHALLENGEarray	University of Minnesota Minneapolis USA /1995	Academic	24	**5650** 8640	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
401	Fujitsu VPP500/4	IFP (Institute Francais du Petrole) Rueil-Malmaison France /1995	Academic Geophysics	4	**5600** 6400	7344 1250
402	Fujitsu VPP500/4	Toritsu Kagaku Gijutsu University Japan /1993	Academic	4	**5600** 6400	7344 1250
403	Fujitsu VPP500/4	Toyota Motor Company Japan /1994	Industry Automotive	4	**5600** 6400	7344 1250
404	IBM SP2/27	Hill's Pet Food USA /1996	Industry	27	**5580** 7180	. .
405	Digital AlphaServer 8400 5/440	CSC (Center for Scientific Computing) Espoo Finland /1996	Academic	10	**5545** 8740	. .
406	IBM SP2/24	Adapco USA /1996	Industry	24	**5500** 7390	. .
407	Hewlett-Packard SPP1600/XA-32	CILEA Milano Italy /1996	Research	32	**5452** 7680	27000 4500
408	Hewlett-Packard SPP1600/XA-32	Cyfronet Krakau Poland /1996	Academic	32	**5452** 7680	27000 4500
409	Hewlett-Packard SPP1600/XA-32	Ford Dearborn USA /1996	Industry Automotive	32	**5452** 7680	27000 4500
410	Hewlett-Packard SPP1600/XA-32	JCCWC San Antonio USA /1995	Classified	32	**5452** 7680	27000 4500
411	Hewlett-Packard SPP1600/XA-32	NCCOSC USA /1996	Research	32	**5452** 7680	27000 4500
412	Hewlett-Packard SPP1600/XA-32	University of Michigan Ann Arbor USA /1996	Academic	32	**5452** 7680	27000 4500
413	SGI POWER CHALLENGE 10000	ATT Murray Hill USA /1996	Industry Electronics	20	**5430** 7800	15000 2600
414	SGI POWER CHALLENGE 10000	ATT Murray Hill USA /1996	Industry Electronics	20	**5430** 7800	15000 2600
415	SGI POWER CHALLENGE 10000	Chevron La Habra USA /1996	Industry Geophysics	20	**5430** 7800	15000 2600
416	SGI POWER CHALLENGE 10000	Dream Quest Simi Valley USA /1996	Industry Image Proc.	20	**5430** 7800	15000 2600
417	SGI POWER Onyx 10000	McDonnell Douglas St. Louis USA /1996	Industry Aerospace	20	**5430** 7800	15000 2600
418	SGI POWER CHALLENGE 10000	Pfizer Groton USA /1996	Industry Pharmaceutics	20	**5430** 7800	15000 2600
419	IBM SP2/26	Dassault Aviation France /1995	Industry Aerospace	26	**5380** 6920	. .
420	IBM SP2/26	James River USA /1995	Industry	26	**5380** 6920	. .

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $world$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
421	IBM SP2/26	John Alden Insurance USA /1994	Industry	26	**5380** 6920	. .
422	IBM SP2/26	La Caixa Spain /1996	Industry Database	26	**5380** 6920	. .
423	IBM SP2/26	Norfolk Southern Railroad USA /1995	Industry	26	**5380** 6920	. .
424	IBM SP2/26	Revlon USA /1996	Industry	26	**5380** 6920	. .
425	IBM SP2/26	Tohoku University Aramaki Japan /1996	Academic	26	**5380** 6920	. .
426	IBM SP2/26	University of Pennsylvania USA /1996	Academic	26	**5380** 6920	. .
427	Parsytec GC PowerPlus/128	Japan Institute of Advanced Technology Japan /1994	Research	128	**5246** 10240	22000 7800
428	Parsytec GC PowerPlus/128	Swedish National Supercomputer Centre Linkoping Sweden /1994	Academic	128	**5246** 10240	22000 7800
429	Parsytec GC PowerPlus/128	Technische Universitaet Chemnitz Chemnitz Germany /1994	Academic	128	**5246** 10240	22000 7800
430	Parsytec GC PowerPlus/128	Universitaet Hamburg-Harburg Hamburg-Harburg Germany /1994	Academic	128	**5246** 10240	22000 7800
431	TMC CM-2/64k	Florida State University Tallahassee USA / .	Academic	2048	**5200** 14000	26624 11000
432	TMC CM-2/64k	SRC USA /1993	Industry	2048	**5200** 14000	26624 11000
433	IBM SP2/25	ICG Salzgitter Germany /1996	Industry	25	**5180** 6660	. .
434	IBM SP2/25	MBNA USA /1996	Industry	25	**5180** 6660	. .
435	Cray Y-MP J932/28-2048	Government USA /1996	Classified	28	**5075** 5600	. .
436	Digital AlphaServer 8400 5/350	CERN Geneva Switzerland /1996	Research	10	**5074** 7000	9540 3010
437	Digital AlphaServer 8400 5/350	Informix USA /1996	Industry Database	10	**5074** 7000	9540 3010
438	Meiko CS-2/224	Lawrence Livermore National Laboratory Livermore USA /1994	Research Energy	224	**5000** 40300	18688 6144
439	Meiko CS-2/128	CERN Geneva Switzerland /1996	Research	128	**5000** 23000	18688 6144
440	Meiko CS-2/128	Universitaet Wien Wien Austria /1994	Academic	128	**5000** 23000	18688 6144

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
441	Meiko CS-2/64	Lawrence Livermore National Laboratory Livermore USA /1994	Research Energy	64	**5000** 11500	18688 6144
442	TMC CM-200/32k	Government USA /1989	Classified	1024	**5000** 10000	21504 8192
443	TMC CM-200/32k	Minnesota Supercomputer Center USA / .	Academic	1024	**5000** 10000	21504 8192
444	TMC CM-200/32k	Western Geophysical Houston USA /1994	Industry Geophysics	1024	**5000** 10000	21504 8192
445	Digital AlphaServer 8400 5/300	Dial Corporation Phoenix USA /1996	Industry Construction	12	**5000** 7200	9548 1148
446	Digital AlphaServer 8400 5/300	National Security Agency USA /1996	Classified	12	**5000** 7200	9548 1148
447	NEC SX-3/22	NEC Systems Laboratories Inc. Houston USA /1991	Research	2	**5000** 5500	3072 384
448	NEC SX-3/14	National Institute of Environmental Studies Japan /1992	Research Environment	1	**5000** 5500	3072 384
449	IBM SP2/24	Aetna Life Insurance USA /1995	Industry	24	**4990** 6400	. .
450	IBM SP2/24	Brown University Providence USA /1996	Academic	24	**4990** 6400	. .
451	IBM SP2/24	CSC (Centre for Sientific Computing) Espoo Finland /1995	Academic	24	**4990** 6400	. .
452	IBM SP2/24	Credit Suisse Switzerland /1995	Industry Finance	24	**4990** 6400	. .
453	IBM SP2/24	Equifax USA /1996	Industry	24	**4990** 6400	. .
454	IBM SP2/24	Indiana University USA /1996	Academic	24	**4990** 6400	. .
455	IBM SP2/24	National Institute of Environmental Studies Japan /1994	Research	24	**4990** 6400	. .
456	IBM SP2/24	Nationwide Life Insurance USA /1995	Industry Database	24	**4990** 6400	. .
457	IBM SP2/24	Sybase USA /1995	Industry Database	24	**4990** 6400	. .
458	IBM SP2/24	University of Pennsylvania USA /1996	Academic	24	**4990** 6400	. .
459	SGI ORIGIN 2000	INRIA - Sophia Antipolis Rennes France /1996	Research	16	**4961** 6240	15000 2500
460	SGI ORIGIN 2000	University of Miami Miami USA /1996	Academic	16	**4961** 6240	15000 2500

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
461	SGI POWER CHALLENGEarray	Pacific Northwest Laboratories/Batelle Hanford USA /1995	Research	24	**4896** 7200	18000 3500
462	SGI POWER CHALLENGEarray	University of Oregon Eugene USA /1995	Academic	24	**4896** 7200	18000 3500
463	SGI POWER CHALLENGE 10000	Allison Engine Corp. Indianapolis USA /1996	Industry Aerospace	16	**4862** 6240	15000 2500
464	SGI POWER CHALLENGE 10000	Amgen Inc. Thousand Oaks USA /1996	Industry Pharmaceutics	16	**4862** 6240	15000 2500
465	SGI POWER CHALLENGE 10000	Audi AG Ludwigshafen Germany /1996	Industry Automotive	16	**4862** 6240	15000 2500
466	SGI POWER CHALLENGE 10000	Centro Italiano Ricerche Aerospaziali (CIRA) Capua Italy /1996	Research	16	**4862** 6240	15000 2500
467	SGI POWER CHALLENGE 10000	Mercedes-Benz Sindelfingen Germany /1996	Industry Automotive	16	**4862** 6240	15000 2500
468	SGI POWER CHALLENGE 10000	Mississippi State University Starkeville USA /1996	Academic	16	**4862** 6240	15000 2500
469	SGI POWER CHALLENGE 10000	Motorola Ft. Lauderdale USA /1996	Industry Electronics	16	**4862** 6240	15000 2500
470	SGI POWER CHALLENGE 10000	NIH (National Institute of Health) Frederick USA /1996	Research	16	**4862** 6240	15000 2500
471	SGI POWER CHALLENGE 10000	NIH (National Institute of Health) Frederick USA /1996	Research	16	**4862** 6240	15000 2500
472	SGI POWER CHALLENGE 10000	NIH (National Institute of Health) Frederick USA /1996	Research	16	**4862** 6240	15000 2500
473	SGI POWER CHALLENGE 10000	NIH (National Institute of Health) Frederick USA /1996	Research	16	**4862** 6240	15000 2500
474	SGI POWER CHALLENGE 10000	Nagoya University Nagoya Japan /1996	Academic	16	**4862** 6240	15000 2500
475	SGI POWER CHALLENGE 10000	Osaka University Osaka Japan /1996	Academic	16	**4862** 6240	15000 2500
476	SGI POWER CHALLENGE 10000	Square LA Marina del Rey USA /1996	Industry Image Proc.	16	**4862** 6240	15000 2500
477	SGI POWER CHALLENGE 10000	State University of New York Stonybrook USA /1996	Academic	16	**4862** 6240	15000 2500
478	SGI POWER CHALLENGE 10000	Technische Universitaet Wien Wien Austria /1996	Academic	16	**4862** 6240	15000 2500
479	SGI POWER CHALLENGE 10000	University of Auckland Auckland New Zealand /1996	Academic	16	**4862** 6240	15000 2500
480	SGI POWER CHALLENGE 10000	Western Geophysical Cairo Egypt /1996	Industry Geophysics	16	**4862** 6240	15000 2500

Mannheim/Tennessee November 18, 1996

TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
481	SGI POWER CHALLENGE 10000	Western Geophysical Houston USA /1996	Industry Geophysics	16	**4862** 6240	15000 2500
482	SGI POWER CHALLENGE 10000	Western Geophysical Houston USA /1996	Industry Geophysics	16	**4862** 6240	15000 2500
483	SGI POWER CHALLENGE 10000	Western Geophysical Houston USA /1996	Industry Geophysics	16	**4862** 6240	15000 2500
484	SGI POWER CHALLENGE 10000	Western Geophysical Houston USA /1996	Industry Geophysics	16	**4862** 6240	15000 2500
485	Hewlett-Packard SPP1000/XA-48	Tokyo University Tokyo Japan /1996	Academic	48	**4802** 9600	. .
486	IBM 9076-005 SP1	Argonne Nat. Lab USA /1993	Research	128	**4800** 16000	26000 6000
487	IBM SP2/23	American Express USA /1996	Industry Finance	23	**4790** 6130	. .
488	IBM SP2/23	CEA/CESTA Bordeaux France /1995	Research	23	**4790** 6130	. .
489	IBM SP2/23	GTE Communications USA /1996	Industry	23	**4790** 6130	. .
490	IBM SP2/23	University of Southampton Southampton UK /1996	Academic	23	**4790** 6130	. .
491	KSR KSR2-80	Pacific Northwest Laboratories/Batelle Richland USA /1994	Research	80	**4770** 6400	. .
492	SGI POWER CHALLENGEarray	Florida State University Tallahassee USA /1995	Academic	20	**4710** 7200	. .
493	SGI POWER CHALLENGEarray	University of Queensland St Lucia Australia /1995	Academic	20	**4710** 7200	. .
494	Cray Y-MP C98/6256	General Electric - Aircraft Eng USA /1995	Industry Aerospace	6	**4630** 5715	. .
495	Cray Y-MP C98/6256	NIST - US Department of Commerce Gaithersburg USA /1996	Research	6	**4630** 5715	. .
496	SGI POWER CHALLENGE	Delta Airlines Atlanta USA /1996	Industry Database	18	**4620** 6480	2500 540
497	SGI POWER CHALLENGE	Delta Airlines Atlanta USA /1996	Industry Database	18	**4620** 6480	2500 540
498	SGI POWER CHALLENGE	Delta Airlines Atlanta USA /1996	Industry Database	18	**4620** 6480	2500 540
499	SGI POWER CHALLENGE	Ford Detroit USA /1995	Industry Automotive	18	**4620** 6480	2500 540
500	SGI POWER CHALLENGE	Goodyear - Technical Center Colmar-Berg Luxembourg /1996	Industry Automotive	18	**4620** 6480	2500 540

Mannheim/Tennessee November 18, 1996

4 Statistics on Manufacturers and Continents

As basic statistics of the complete list, we give the number of systems installed with respect to the different manufacturers in the different countries or continents (Table 2) as well as the accumulated R_{max} values (Table 3) and R_{peak} values (Table 4) for those systems. More extensive analyses of the situation and its evolution over time can be found in the series of TOP500Reports (TOP500Report 1993 [3], 1994 [4] and 1995 [5]). Customized statistics can be obtained by using WWW at http://parallel.rz.uni-mannheim.de/top500.html or http://www.netlib.org/benchmark/top500.html.

Table 2: Number of Systems Installed

TOP500 Statistics — Number of Systems Installed					
	USA/Canada	Europe	Japan	others	Total
SGI/Cray	139	62	13	8	222
Cray only	78	42	10	1	131
SGI only	61	20	3	7	91
IBM	70	35	13	8	126
Fujitsu	2	7	21	1	31
NEC	6	7	15		28
TMC	21	1	1		23
Hewlett-Packard	13	8	1		22
Intel	13	2	3		18
Hitachi		1	12		13
others	7	9	1		17
Total	271	132	80	17	500

Mannheim/Tennessee November 18, 1996

Table 3: Installed $\mathbf{R_{max}}$

TOP500 Statistics — Installed R_{max} [Gflop/s]					
	USA/Canada	Europe	Japan	others	Total
SGI/Cray	1729.7	907.2	142.2	51.6	2831.5
Cray only	1339.4	781.8	124.2	13.7	2259.2
SGI only	390.3	126.0	18.0	37.9	572.3
IBM	885.0	322.0	115.1	70.0	1392.1
Fujitsu	19.3	169.4	910.5	27.7	1126.9
NEC	98.1	181.8	426.7		706.6
TMC	320.4	7.7	7.7		335.8
Hewlett-Packard	94.1	52.5	4.8		151.4
Intel	408.3	31.0	121.1		560.4
Hitachi		14.2	774.5		788.7
others	36.5	52.4	5.2		94.1
Total	3591.5	1738.8	2507.8	149.3	7987.4

Mannheim/Tennessee November 18, 1996

Table 4: Installed $\mathbf{R_{peak}}$

TOP500 Statistics — Installed R_{peak} [Gflop/s]					
	USA/Canada	Europe	Japan	others	Total
SGI/Cray	2492.6	1327.8	202.1	66.1	4088.7
Cray only	1879.0	1147.1	177.1	15.2	3218.5
SGI only	613.6	180.7	25.0	50.9	870.2
IBM	1267.2	435.0	153.8	94.0	1950.0
Fujitsu	19.8	178.0	1110.4	28.6	1336.8
NEC	105.5	192.5	452.8		750.8
TMC	702.5	16.0	20.0		738.5
Hewlett-Packard	141.9	87.0	9.6		238.5
Intel	545.7	37.2	154.7		737.6
Hitachi		19.0	1135.0		1154.0
others	90.1	123.2	10.2		223.5
Total	5365.3	2415.7	3248.7	188.7	11218

Mannheim/Tennessee November 18, 1996

References

[1] H. W. Meuer, *The Mannheim Supercomputer Statistics 1986—1992* in [3]

[2] J. J. Dongarra, *Performance of Various Computers Using Standard Linear Equations Software*, Computer Science Department, University of Tennessee, CS-89-85, 1994

[3] J. J. Dongarra, H. W. Meuer and E. Strohmaier, eds.
TOP500 Report 1993, University of Mannheim, 1994

[4] J. J. Dongarra, H. W. Meuer and E. Strohmaier, eds.
TOP500 Report 1994, SUPERCOMPUTER 60/61, volumne 11, number 2/3, June 1995

[5] J. J. Dongarra, H. W. Meuer and E. Strohmaier, eds.
TOP500 Report 1995, SUPERCOMPUTER , volumne 12, number 1, January 1996