TOP500 Supercomputer Sites

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RUM 50/97
UT-CS-97-365

June 19, 1997

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June 19, 1997

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.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
1	Intel ASCI Red	Sandia National Labs Albuquerque USA /1997	Research	7264	**1068000** 1453000	215000 53400
2	Hitachi/Tsukuba CP-PACS/2048	Center for Computational Physics, Univ of Tsukuba Tsukuba Japan /1996	Academic	2048	**368200** 614000	103680 30720
3	SGI/Cray T3E900 LC696-128	United Kingdom Meteorological Office Bracknell UK /1997	Research Weather	696	**264800** 626400	. .
4	Fujitsu Numerical Wind Tunnel	NAL Japan /1996	Research Aerospace	167	**229700** 281000	66132 18018
5	Hitachi SR2201/1024	University of Tokyo Tokyo Japan /1996	Academic	1024	**220400** 307000	138240 34560
6	SGI/Cray T3E LC512-128	Forschungszentrum Juelich (FZJ) Juelich Germany /1996	Research	512	**176000** 307200	. .
7	SGI/Cray T3E LC512-128	Government USA /1997	Classified	512	**176000** 307200	. .
8	SGI/Cray T3E LC512-128	Max-Planck-Gesellschaft MPI/IPP Garching Germany /1997	Research	512	**176000** 307200	. .
9	SGI/Cray T3E LC512-128	NASA/Goddard Space Flight Center Greenbelt USA /1996	Research Weather	512	**176000** 307200	. .
10	SGI/Cray T3E LC512-128	Pittsburgh Supercomputer Center Pittsburgh USA /1996	Research	512	**176000** 307200	. .
11	SGI/Cray T3E LC512-128	Universitaet Stuttgart Stuttgart Germany /1996	Research	512	**176000** 307200	. .
12	IBM SP2 P2 120MHz/472	Pacific Northwest Laboratories/Batelle Richland USA /1997	Research	472	**151800** 226560	61000 22600
13	Intel XP/S140	Sandia National Labs Albuquerque USA /1993	Research	3680	**143400** 184000	55700 20500
14	SGI/Cray T3E900 LC256-512	Minnesota Supercomputer Center USA /1997	Academic	256	**138700** 230400	81920 10192
15	SGI/Cray T3E900 LC256-256	Naval Oceanographic Office (NAVOCEANO) Bay Saint Louis USA /1997	Research Weather	256	**138700** 230400	81920 10192
16	Intel XP/S-MP 150	Oak Ridge National Laboratory Oak Ridge USA /1995	Research	3072	**127100** 154000	86000 17800
17	SGI/Cray T3E750 LC256-128	Commissariat a l'Energie Atomique (CEA) Grenoble France /1997	Research Energy	256	**115500** 192000	. .
18	Fujitsu VPP700/56	Kyushu University Fukuoka Japan /1996	Academic	56	**110300** 123200	109200 10752
19	Fujitsu VPP500/80	National Lab. for High Energy Physics Japan /1994	Research	80	**109800** 128000	46400 11030
20	Intel XP/S-MP 125	Japan Atomic Energy Research Japan /1996	Research	2502	**103500** 125100	. .

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TOP500 **Supercomputers - Worldwide**

N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
21	SGI/Cray T3D MC1024-8	Government USA /1994	Classified	1024	**100500** 152000	81920 10224
22	Fujitsu VPP700/46	ECMWF Reading UK /1996	Research Weather	46	**94300** 101200	100280 8280
23	SGI/Cray T3E LC256-128	CNRS/IDRIS Orsay France /1996	Research	256	**93200** 154000	53664 11040
24	SGI/Cray T3E LC256-128	Cray Research Eagan USA /1997	Vendor	256	**93200** 154000	53664 11040
25	SGI/Cray T3E LC256-128	DOD/CEWES Vicksburg USA /1996	Research Mechanics	256	**93200** 154000	53664 11040
26	SGI/Cray T3E LC256-128	UCSD/San Diego Supercomputer Center San Diego USA /1996	Academic	256	**93200** 154000	53664 11040
27	IBM SP2/512	Cornell Theory Center Ithaca USA /1994	Academic	512	**88400** 136000	73500 20150
28	SGI/Cray T3E750 LC192-128	CSC (Center for Scientific Computing) Espoo Finland /1996	Academic	192	**86600** 144000	. .
29	IBM SP2 P2 135MHz/256	DOD/CEWES Vicksburg USA /1997	Industry	256	**83370** 138240	. .
30	IBM SP2 P2 135MHz/256	Wright-Patterson Air Force Base USA /1997	Research	256	**83370** 138240	. .
31	IBM SP2 P2 120MHz/256	IBM/Poughkeepsie Poughkeepsie USA /1997	Vendor	256	**83370** 122880	. .
32	SGI/Cray T3E LC200-128	ARPA USA /1997	Academic	200	**74480** 120000	. .
33	Fujitsu/SNI VPP700/34	Leibniz Rechenzentrum Muenchen Germany /1997	Academic	34	**71150** 74800	. .
34	SGI/Cray T3E900 LC128-128	KIST/System Engineering Research Institute (SSC) Korea /1997	Research	128	**69300** 115200	57344 7040
35	SGI/Cray T3E900 LC128-128	University of Edinburgh Edinburgh UK /1997	Academic	128	**69300** 115200	57344 7040
36	IBM SP2/384	Maui High-Performance Computing Center (MHPCC) USA /1994	Research	384	**66300** 102400	. .
37	SGI/Cray T3E750 LC136-128	ZIB/Konrad Zuse-Zentrum fuer Informationstechnik Berlin Germany /1997	Academic	136	**61300** 102000	. .
38	SGI/Cray T3E LC160-256	NERSC/LBNL Berkley USA /1997	Research	160	**61120** 96000	. .
39	NEC SX-4/32	NEC Fuchu Plant Tokyo Japan /1995	Vendor Benchmarking	32	**60650** 64000	10000 1560
40	NEC SX-4/32	National Institute for Environmental Studies Tsukuba Japan /1997	Research Environment	32	**60650** 64000	10000 1560

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N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
41	NEC SX-4/32	Osaka University Osaka Japan /1996	Academic	32	**60650** 64000	10000 1560
42	NEC SX-4/32	Osaka University Osaka Japan /1996	Academic	32	**60650** 64000	10000 1560
43	NEC SX-4/32	Universitaet Stuttgart Stuttgart Germany /1996	Research	32	**60650** 64000	10000 1560
44	TMC CM-5/1056	Los Alamos National Laboratory Los Alamos USA /1993	Research Energy	1056	**59700** 135100	52224 24064
45	Fujitsu VPP500/42	Japan Atomic Energy Research Japan /1994	Research	42	**59600** 67200	. .
46	Fujitsu VPP500/42	Nagoya University Nagoya Japan /1995	Academic	42	**59600** 67200	. .
47	Hitachi SR2201/256	Real World Computing (RWCP) Tokyo Japan /1997	Research	256	**58680** 77000	77760 13440
48	Fujitsu VPP500/40	National Institute of Genetics Mishima Japan /1995	Research	40	**56900** 64000	. .
49	Fujitsu VPP500/40	Tokyo University - Inst. of Solid State Physics Tokyo Japan /1994	Academic	40	**56900** 64000	. .
50	SGI/Cray T3E LC184-128	National Supercomputer Centre (NSC) Linkoping Sweden /1996	Academic	184	**55770** 110400	. .
51	SGI/Cray T3E LC136-128	Commissariat a l'Energie Atomique (CEA) Limeil France /1996	Research	136	**53100** 81800	. .
52	TMC CM-5/896	Minnesota Supercomputer Center USA /1994	Academic	896	**52300** 114700	. .
53	SGI/Cray T3D MC512-8	Los Alamos National Laboratory Los Alamos USA /1994	Research Energy	512	**50800** 76000	57856 7136
54	SGI/Cray T3D MC512-8	Minnesota Supercomputer Center USA /1995	Academic	512	**50800** 76000	57856 7136
55	SGI/Cray T3D MC512-8	Pittsburgh Supercomputing Center Pittsburgh USA /1994	Academic	512	**50800** 76000	57856 7136
56	SGI/Cray T3D MC512-8	University of Edinburgh Edinburgh UK /1996	Academic	512	**50800** 76000	57856 7136
57	SGI/Cray T3E LC128-128	CINECA Bologna Italy /1996	Research	128	**50430** 77000	58848 7392
58	SGI/Cray T3E AC128-64	Japan Adv. Inst. of Science and Technology (JAIST) Hokuriku Japan /1997	Academic	128	**50430** 77000	58848 7392
59	SGI/Cray T3E LC128-128	NRI for Earth Science and Disaster (NIED) Japan /1997	Research	128	**50430** 77000	58848 7392
60	NEC SX-4/25	NAL Japan /1997	Research	25	**47550** 50000	. .

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61	Fujitsu VPP500/32	The Angstrom Technology Partnership Tsukuba Japan /1993	Research	32	**46100** 51200	29760 5350
62	IBM SP2/256	Lawrence Livermore National Laboratory Livermore USA /1996	Research Energy	256	**44200** 68000	53000 13500
63	IBM SP2/256	Lawrence Livermore National Laboratory Livermore USA /1996	Research Energy	256	**44200** 68000	53000 13500
64	IBM SP2/256	Universitaet/Forschungszentrum Karlsruhe Karlsruhe Germany /1997	Academic	256	**44200** 68000	53000 13500
65	Fujitsu VPP500/28	Institute of Physical and Chemical Res. (RIKEN) Tokyo Japan /1993	Research	28	**40475** 44800	. .
66	NEC SX-4/20	Japan Marine Science and Technology Yokosuka Japan /1995	Research	20	**38195** 40000	. .
67	NEC SX-4/20	National Research Institute for Metals Tsukuba Japan /1996	Research	20	**38195** 40000	. .
68	NEC SX-4/20	Toyota Central Research Development Japan /1996	Industry Automotive	20	**38195** 40000	. .
69	SGI/Cray T3E900 AC64-128	Phillips Petroleum Company Bartlesville USA /1997	Industry Geophysics	64	**34800** 57600	40960 4992
70	SGI/Cray T3E AC88-128	Norwegian University of Science and Technology Trondheim Norway /1997	Academic	88	**34650** 52800	. .
71	SGI/Cray T3E LC88-128	University of Alaska - ARSC Fairbanks USA /1997	Academic	88	**34650** 52800	. .
72	Fujitsu VPP300/16	Japan Atomic Energy Research Japan /1996	Research	16	**34100** 35200	59200 3520
73	Fujitsu VPP300/16	Japan Science and Technology Tokyo Japan /1996	Research	16	**34100** 35200	59200 3520
74	Fujitsu VPP300/16	Reactor Nuclear Fuel Development Japan /1996	Research	16	**34100** 35200	59200 3520
75	Fujitsu/SNI VPP300/16	Universitaet/Forschungszentrum Karlsruhe Karlsruhe Germany /1997	Academic	16	**34100** 35200	59200 3520
76	Intel XP/S-MP 41	Rome Laboratory USA /1995	Research	816	**33700** 40800	. .
77	IBM SP2 P2 120MHz/94	Argonne National Laboratory USA /1996	Research	94	**32680** 45120	. .
78	SGI/Cray T3E AC80-64	The Scripps Research Institute La Jolla USA /1997	Research	80	**31500** 48000	. .
79	NEC SX-4/16	Atmospheric Environment Service (AES) Dorval Canada /1995	Research Weather	16	**30710** 32000	10000 890
80	NEC SX-4/16	Danish Meteorological Institute Copenhagen Denmark /1997	Research	16	**30710** 32000	10000 890

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81	NEC SX-4/16	National Aerospace Laboratory (NLR) Noordoostpolder Netherlands /1996	Research Aerospace	16	**30710** 32000	10000 890
82	NEC SX-4/16	National Cardiovascular Center Japan /1996	Research	16	**30710** 32000	10000 890
83	NEC SX-4/16	Swiss Scientific Computing Center (CSCS) Manno Switzerland /1996	Research	16	**30710** 32000	10000 890
84	TMC CM-5/512	National Security Agency USA /1993	Classified	512	**30400** 66000	36864 16384
85	SGI/Cray Y-MP T932/321024	Government USA /1996	Classified	32	**29360** 58000	. .
86	SGI/Cray Y-MP T932/321024	Government USA /1997	Classified	32	**29360** 58000	. .
87	SGI/Cray Y-MP T932/321024	NRI for Earth Science and Disaster (NIED) Japan /1997	Research	32	**29360** 58000	. .
88	SGI/Cray Y-MP T932/321024	Nippon Telegraph and Telephone (NTT) Tokyo Japan /1995	Industry Finance	32	**29360** 58000	. .
89	IBM SP2/160	NASA/Ames Research Center/NAS Moffett Field USA /1994	Research	160	**28700** 42500	42200 10300
90	Hitachi S-3800/480	Hitachi Ltd. GPCD Japan /1994	Vendor Software	4	**28400** 32000	15500 830
91	Hitachi S-3800/480	Japan Meteorological Agency Japan /1995	Research Weather	4	**28400** 32000	15500 830
92	Hitachi S-3800/480	University of Tokyo Tokyo Japan /1993	Academic	4	**28400** 32000	15500 830
93	Fujitsu VPP300/13	Australian National University Canberra Australia /1996	Academic	13	**27720** 28600	. .
94	SGI/Cray Y-MP T932/241024	Ford Motor Company Dearborn USA /1996	Industry Automotive	24	**26170** 43500	. .
95	Fujitsu VPP300/12	Japan Atomic Energy Research Japan /1996	Research	12	**25600** 26400	. .
96	SGI/Cray T3D MC256-8/464	Bear Stearns USA /1996	Industry Finance	256	**25300** 38000	40960 4918
97	SGI/Cray T3D SC256-8/264	Caltech/JPL Pasadena USA /1994	Research	256	**25300** 38000	40960 4918
98	SGI/Cray T3D MC256-8	Defense Research Agency Farnborough UK /1994	Classified	256	**25300** 38000	40960 4918
99	SGI/Cray T3D MC256-8	EXXON USA /1995	Industry Geophysics	256	**25300** 38000	40960 4918
100	SGI/Cray T3D MC256-8	Ecole Polytechnique Federale de Lausanne Lausanne Switzerland /1994	Academic	256	**25300** 38000	40960 4918

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101	SGI/Cray T3D SC256-8/364	Lawrence Livermore National Laboratory Livermore USA /1994	Research Energy	256	**25300** 38000	40960 4918
102	SGI/Cray T3D SC256-8/464	ZIB/Konrad Zuse-Zentrum fuer Informationstechnik Berlin Germany /1995	Academic	256	**25300** 38000	40960 4918
103	SGI/Cray T3E LC64-128	Cray Research USA /1996	Vendor	64	**25190** 38000	39936 4896
104	SGI/Cray T3E AC64-128	EDS/General Motors Auburn Hills USA /1996	Industry Automotive	64	**25190** 38000	39936 4896
105	SGI/Cray T3E AC64-128	Minnesota Supercomputer Center USA /1997	Academic	64	**25190** 38000	39936 4896
106	SGI/Cray T3E AC64-128	Technical University Delft (TUD) Delft Netherlands /1996	Academic	64	**25190** 38000	39936 4896
107	Digital AlphaServer 8400 5/440	Lawrence Livermore National Laboratory Livermore USA /1996	Research	80	**24700** 70400	30712 4584
108	Digital AlphaServer 8400 5/440	Digital Equipment Corporation Maynard USA /1997	Vendor Benchmarking	64	**24700** 56300	30712 4584
109	Fujitsu VPP500/16	Reactor Nuclear Fuel Development Japan /1996	Research	16	**23600** 25600	21120 3360
110	NEC SX-3/44R	Atmospheric Environment Service (AES) Dorval Canada /1994	Research Weather	4	**23200** 26000	6400 830
111	NEC SX-3/44R	Tohoku University Aramaki Japan /1993	Academic	4	**23200** 26000	6400 830
112	SGI/Cray Y-MP T932/20512	NOAA/Geophysical Fluid Dynamics Laboratory (GFDL) Princeton USA /1996	Research Weather	20	**23075** 36250	. .
113	Hitachi SR2201/96	University of Cambridge Cambridge UK /1997	Academic	96	**22180** 28800	. .
114	Fujitsu VPP500/15	Kyoto University Kyoto Japan /1994	Academic	15	**22150** 24000	. .
115	SGI/Cray T3E900 AC40-128	NOAA/Geophysical Fluid Dynamics Laboratory (GFDL) Princeton USA /1997	Research Weather	40	**21750** 36000	. .
116	SGI/Cray T3E900 AC40-128	Universitaet Rostock Germany /1997	Academic	40	**21750** 36000	. .
117	Hitachi S-3800/380	Hokkaido University Sapporo Japan /1994	Academic	3	**21600** 24000	15680 760
118	Hitachi S-3800/380	Institute for Materials Research/Tohoku University Japan /1994	Academic	3	**21600** 24000	15680 760
119	Sun Ultra HPC 10000	ATT USA /1997	Industry	64	**21370** 32000	15000 4200
120	Sun Ultra HPC 10000	ATT USA /1997	Industry	64	**21370** 32000	15000 4200

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N $world$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
121	Sun Ultra HPC 10000	ATT USA /1997	Industry	64	**21370** 32000	15000 4200
122	Sun Ultra HPC 10000	Allstate Insurance Chicago USA /1997	Industry Database	64	**21370** 32000	15000 4200
123	Sun Ultra HPC 10000	Sun San Diego USA /1997	Vendor	64	**21370** 32000	15000 4200
124	Sun Ultra HPC 10000	Sun San Diego USA /1997	Vendor	64	**21370** 32000	15000 4200
125	Sun Ultra HPC 10000	University of Tokyo Tokyo Japan /1997	Academic	64	**21370** 32000	15000 4200
126	SGI/Cray T3E AC52-128	AWI (Alfred Wegener Institut) Bremerhaven Germany /1996	Research	52	**20430** 31200	. .
127	IBM SP2/110	KTH - Royal Institute of Technology Stockholm Sweden /1996	Research	110	**20370** 29210	. .
128	NEC SX-3/44	Atmospheric Environment Service (AES) Dorval Canada /1991	Research Weather	4	**20000** 22000	6144 832
129	IBM SP2 P2 120MHz/56	Chase Manhatten New York USA /1997	Industry Database	56	**19750** 26880	. .
130	IBM SP2/104	MCI USA /1994	Industry Database	104	**19340** 27620	. .
131	SGI/Cray ORIGIN 2000	Cray Research Eagan USA /1997	Vendor	64	**19230** 24960	32000 6000
132	SGI/Cray ORIGIN 2000	Cray Research Eagan USA /1997	Vendor	64	**19230** 24960	32000 6000
133	SGI/Cray ORIGIN 2000	INRIA - Sophia Antipolis Rennes France /1997	Research	64	**19230** 24960	32000 6000
134	SGI/Cray ORIGIN 2000	Indiana University Bloomington USA /1997	Academic	64	**19230** 24960	32000 6000
135	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	64	**19230** 24960	32000 6000
136	SGI/Cray ORIGIN 2000	NCSA Urbana-Champaign USA /1997	Research	64	**19230** 24960	32000 6000
137	SGI/Cray ORIGIN 2000	NCSA Urbana-Champaign USA /1997	Research	64	**19230** 24960	32000 6000
138	SGI/Cray ORIGIN 2000	Naval Research Laboratory (NRL) Washington D.C. USA /1996	Research	64	**19230** 24960	32000 6000
139	SGI/Cray ORIGIN 2000	Oracle Corporation Redwood Shores USA /1997	Industry Database	64	**19230** 24960	32000 6000
140	SGI/Cray ORIGIN 2000	Oracle Corporation Redwood Shores USA /1997	Industry Database	64	**19230** 24960	32000 6000

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N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
141	SGI/Cray ORIGIN 2000	Silicon Graphics Mountain View USA /1997	Vendor Software	64	**19230** 24960	32000 6000
142	SGI/Cray ORIGIN 2000	Silicon Graphics Mountain View USA /1997	Vendor Software	64	**19230** 24960	32000 6000
143	Fujitsu VPP300/9	ECMWF Reading UK /1997	Research Weather	9	**19225** 19800	. .
144	SGI/Cray T3E AC48-128	Mobil / Technical Center Tulsa USA /1997	Industry Geophysics	48	**18840** 28800	. .
145	Intel XP/S-MP 22	ETH Zuerich Switzerland /1995	Academic	450	**18700** 22500	. .
146	SGI/Cray POWER CHALLENGEarray	US Army Research Laboratory Aberdeen USA /1995	Research	96	**18455** 28800	53000 20000
147	IBM SP2/98	Citicorp USA /1996	Industry Finance	98	**18310** 26030	. .
148	IBM SP2 P2 120MHz/51	Maui High-Performance Computing Center (MHPCC) USA /1997	Research	51	**18010** 24480	. .
149	SGI/Cray T3E900 AC32-64	MIT/Lincoln Laboratory USA /1997	Academic	32	**17400** 28800	28672 3200
150	NEC SX-3/34R	National Inst. for Molecular Science Okozaki Japan /1993	Research	3	**17400** 19500	6144 691
151	NEC SX-3/34R	VW (Volkswagen AG) Wolfsburg Germany /1996	Industry Automotive	3	**17400** 19500	6144 691
152	Fujitsu VPP300/8	Nippon University Japan /1996	Academic	8	**17100** 17600	41600 2080
153	Fujitsu/SNI VPP300/8	Universitaet Aachen Aachen Germany /1996	Academic	8	**17100** 17600	41600 2080
154	Sun Ultra HPC 10000	Ministry of the Interior Seoul Korea /1997	Classified	48	**16600** 24000	15000 3600
155	Sun Ultra HPC 10000	Ministry of the Interior Seoul Korea /1997	Classified	48	**16600** 24000	15000 3600
156	Sun Ultra HPC 10000	National Reserve Bank Moscow Russian Federation/1997	Industry	48	**16600** 24000	15000 3600
157	Sun Ultra HPC 10000	Oracle Corporation Redwood Shores USA /1997	Industry Database	48	**16600** 24000	15000 3600
158	Sun Ultra HPC 10000	Oracle Corporation Redwood Shores USA /1997	Industry Database	48	**16600** 24000	15000 3600
159	Sun Ultra HPC 10000	Toshiba Tokyo Japan /1997	Industry	48	**16600** 24000	15000 3600
160	IBM SP2/85	NIH (National Institute of Health) Frederick USA /1995	Research	85	**16090** 22570	. .

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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	SGI/Cray T3E AC40-128	University of Texas Austin USA /1996	Academic	40	**15670** 24000	. .
162	SGI/Cray POWER CHALLENGEarray	NCSA Urbana-Champaign USA /1996	Research	64	**15598** 23040	37000 8500
163	SGI/Cray Y-MP T916/12512	Forschungszentrum Juelich (FZJ) Juelich Germany /1996	Research	12	**15430** 21750	. .
164	NEC SX-4/8	ATR Optical Communication Lab Japan /1996	Research	8	**15350** 16000	. .
165	NEC SX-4/8	German Aerospace Laboratory (DLR) Goettingen Germany /1996	Research Aerospace	8	**15350** 16000	. .
166	NEC SX-4/8	National Geographic Agency Japan /1996	Research	8	**15350** 16000	. .
167	IBM SP2/80	National Center for High Performance Computing Taiwan /1996	Academic	80	**15230** 21250	. .
168	Intel XP/S35	Caltech Pasadena USA /1994	Research	512	**15200** 26000	23000 9000
169	Intel XP/S35	Oak Ridge National Laboratory Oak Ridge USA /1992	Research	512	**15200** 26000	23000 9000
170	TMC CM-5/256	Geco-Prakla Houston USA /1994	Industry Geophysics	256	**15100** 33000	26112 12032
171	TMC CM-5/256	Geco-Prakla Houston USA /1995	Industry Geophysics	256	**15100** 33000	26112 12032
172	TMC CM-5/256	Naval Research Laboratory (NRL) Washington D.C. USA /1992	Research	256	**15100** 33000	26112 12032
173	IBM SP2/79	CNUSC Montpellier France /1996	Academic	79	**15060** 20980	. .
174	Hewlett-Packard Exemplar X-Class	Caltech/JPL Pasadena USA /1997	Research	64	**15010** 64000	26848 1840
175	Hewlett-Packard Exemplar X-Class	Caltech/JPL Pasadena USA /1997	Research	64	**15010** 64000	26848 1840
176	Hewlett-Packard Exemplar X-Class	Caltech/JPL Pasadena USA /1997	Research	64	**15010** 64000	26848 1840
177	Hewlett-Packard Exemplar X-Class	Caltech/JPL Pasadena USA /1997	Research	64	**15010** 64000	26848 1840
178	Hewlett-Packard Exemplar X-Class	Hewlett-Packard CXTC Richardson USA /1997	Vendor Benchmarking	64	**15010** 64000	26848 1840
179	Hewlett-Packard Exemplar X-Class	NCSA Urbana-Champaign USA /1997	Academic	64	**15010** 64000	26848 1840
180	Hewlett-Packard Exemplar X-Class	Naval Research Laboratory (NRL) Washington D.C. USA /1997	Classified	64	**15010** 64000	26848 1840

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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	Hewlett-Packard Exemplar X-Class	Hilti Schaan Liechtenstein /1997	Industry	32	**15010** 32000	26848 1840
182	Hewlett-Packard Exemplar X-Class	Universitaet Leipzig Leipzig Germany /1996	Academic	32	**15010** 32000	26848 1840
183	IBM SP2/78	DKFZ Heidelberg Germany /1996	Research	78	**14890** 20710	. .
184	Hitachi SR2201/64	Hitachi RCS Ebina Japan /1996	Vendor	64	**14890** 19000	38880 6720
185	Hitachi SR2201/64	Japan Atomic Energy Research Japan /1996	Research	64	**14890** 19000	38880 6720
186	Hitachi SR2201/64	Suzuki Motor Japan /1997	Industry Automotive	64	**14890** 19000	38880 6720
187	IBM SP2/77	Leibniz Rechenzentrum Muenchen Germany /1995	Academic	77	**14720** 20450	. .
188	IBM SP2/77	Sears Product Service Group USA /1996	Industry Database	77	**14720** 20450	. .
189	IBM SP2/77	Sears Roebuck USA /1996	Industry Database	77	**14720** 20450	. .
190	Hitachi S-3800/280	Central Res. Inst. of Electric Power Ind. Japan /1996	Research	2	**14600** 16000	15680 570
191	IBM SP2/76	SARA (Stichting Academisch Rekencentrum) Amsterdam Netherlands /1995	Research	76	**14550** 20180	. .
192	IBM SP2/75	Atomic Weapons Establishment Aldermaston UK /1996	Classified	75	**14380** 19920	. .
193	Sun Ultra HPC 10000	Enron Capital Houston USA /1997	Industry	40	**14060** 20000	15000 3000
194	Sun Ultra HPC 10000	Universitaet Koeln Koeln Germany /1997	Academic	40	**14060** 20000	15000 3000
195	Intel Delta	Caltech Pasadena USA /1991	Academic	512	**13900** 20480	25000 7500
196	IBM SP2/72	Nuclear Power Engineering Japan /1995	Industry Energy	72	**13860** 19120	. .
197	SGI/Cray Y-MP C916/16512	Cray Research Eagan USA /1992	Vendor	16	**13700** 15238	10000 650
198	SGI/Cray Y-MP C916/16256	DKRZ Hamburg Germany /1995	Research Weather	16	**13700** 15238	10000 650
199	SGI/Cray Y-MP C916/161024	DOD/CEWES Vicksburg USA /1994	Research Mechanics	16	**13700** 15238	10000 650
200	SGI/Cray Y-MP C916/16256	DOE/Bettis Atomic Power Laboratory USA /1993	Research	16	**13700** 15238	10000 650

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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	SGI/Cray Y-MP C916/16256	DOE/Knolls Atomic Power Laboratory USA /1993	Research	16	**13700** 15238	10000 650
202	SGI/Cray Y-MP C916/16256	ECMWF Reading UK /1994	Research Weather	16	**13700** 15238	10000 650
203	SGI/Cray Y-MP C916/16512	Ford Motor Company Dearborn USA /1993	Industry Automotive	16	**13700** 15238	10000 650
204	SGI/Cray Y-MP C916/16512	Ford Motor Company Dearborn USA /1995	Industry Automotive	16	**13700** 15238	10000 650
205	SGI/Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
206	SGI/Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
207	SGI/Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
208	SGI/Cray Y-MP C916/161024	Government USA /1992	Classified	16	**13700** 15238	10000 650
209	SGI/Cray Y-MP C916/16512	Government USA /1994	Classified	16	**13700** 15238	10000 650
210	SGI/Cray Y-MP C916/16256	Government Communications Headquarters Benhall UK /1994	Classified	16	**13700** 15238	10000 650
211	SGI/Cray Y-MP C916/16512	KIST/System Engineering Research Institute (SSC) Korea /1993	Academic	16	**13700** 15238	10000 650
212	SGI/Cray Y-MP C916/161024	MITI - AIST - RIPS Tsukuba Japan /1994	Research	16	**13700** 15238	10000 650
213	SGI/Cray Y-MP C916/161024	NASA/Ames Research Center/NAS Moffett Field USA /1993	Research	16	**13700** 15238	10000 650
214	SGI/Cray Y-MP C916/16256	NERSC/LBNL Berkley USA /1992	Research	16	**13700** 15238	10000 650
215	SGI/Cray Y-MP C916/16256	NOAA/Geophysical Fluid Dynamics Laboratory (GFDL) Princeton USA /1995	Research Weather	16	**13700** 15238	10000 650
216	SGI/Cray Y-MP C916/16256	NOAA/National Centers for Environment Prediction Suitland USA /1994	Research	16	**13700** 15238	10000 650
217	SGI/Cray Y-MP C916/16512	National Security Agency USA /1994	Classified	16	**13700** 15238	10000 650
218	SGI/Cray Y-MP C916/161024	Naval Oceanographic Office (NAVOCEANO) Bay Saint Louis USA /1994	Research Weather	16	**13700** 15238	10000 650
219	SGI/Cray Y-MP C916/16512	Pittsburgh Supercomputing Center Pittsburgh USA /1994	Academic	16	**13700** 15238	10000 650
220	SGI/Cray Y-MP C916/161024	Tohoku University, Institute of Fluid Science Aramaki Japan /1994	Academic	16	**13700** 15238	10000 650

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N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	$\mathbf{R_{max}}$ R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
221	SGI/Cray Y-MP C916/161024	Wright-Patterson Air Force Base USA /1996	Research	16	**13700** 15238	10000 650
222	IBM SP2/69	PIK Potsdam Germany /1996	Research	69	**13350** 18320	. .
223	IBM SP2/68	DLR Koeln Germany /1996	Research	68	**13180** 18060	. .
224	SGI/Cray Y-MP T932/101024	EDS/General Motors Auburn Hills USA /1996	Industry Automotive	10	**13150** 18125	. .
225	SGI/Cray T3E900 AC24-128	Technische Universitaet Braunschweig Braunschweig Germany /1997	Academic	24	**13050** 21600	. .
226	IBM SP2/67	Bell South USA /1995	Industry Database	67	**13010** 17790	. .
227	Fujitsu VPP300/6	Meiji University Japan /1996	Academic	6	**12850** 13200	. .
228	Fujitsu/SNI VPP300/6	Universitaet Darmstadt Darmstadt Germany /1996	Academic	6	**12850** 13200	. .
229	IBM SP2/66	University of Umea Norway /1997	Academic	66	**12840** 17530	. .
230	SGI/Cray T3D MC128-8	Air Force/Eglin Air Force Base Eglin USA /1994	Classified	128	**12800** 19000	20736 3408
231	SGI/Cray T3D MCA128-8	CNRS/IDRIS Orsay France /1995	Research	128	**12800** 19000	20736 3408
232	SGI/Cray T3D MCA128-8	Commissariat a l'Energie Atomique (CEA) Grenoble France /1994	Research Energy	128	**12800** 19000	20736 3408
233	SGI/Cray T3D MC128-8	Commissariat a l'Energie Atomique (CEA) Limeil-Valenton France /1993	Research	128	**12800** 19000	20736 3408
234	SGI/Cray T3D MCA128-8	Compagnie Generale de Geophysique (CGG) Massy France /1995	Industry Geophysics	128	**12800** 19000	20736 3408
235	SGI/Cray T3D MC128-8	Cray Research Eagan USA /1995	Vendor	128	**12800** 19000	20736 3408
236	SGI/Cray T3D MCA128-8	Cray Research Eagan USA /1996	Vendor	128	**12800** 19000	20736 3408
237	SGI/Cray T3D MCA128-8	ECMWF Reading UK /1994	Research Weather	128	**12800** 19000	20736 3408
238	SGI/Cray T3D MCA128-8	Environmental Protection Agency USA /1995	Research	128	**12800** 19000	20736 3408
239	SGI/Cray T3D MC128-8	Phillips Petroleum Company Bartlesville USA /1994	Industry Geophysics	128	**12800** 19000	20736 3408
240	SGI/Cray T3D MCA128-2	Reactor Nuclear Fuel Development Japan /1994	Research	128	**12800** 19000	20736 3408

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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	SGI/Cray T3D MCA128-8	Tohoku University, Institute of Fluid Science Aramaki Japan /1994	Academic	128	**12800** 19000	20736 3408
242	SGI/Cray T3D MC128-8	University of Alaska - ARSC Fairbanks USA /1995	Academic	128	**12800** 19000	20736 3408
243	Sun Ultra HPC 10000	KT Freetel Seoul Korea /1997	Industry	36	**12700** 18000	. .
244	Sun Ultra HPC 10000	Semiconductor company Boise USA /1997	Industry	36	**12700** 18000	. .
245	IBM SP2/65	CERN Geneva Switzerland /1995	Research	65	**12670** 17260	. .
246	SGI/Cray T3E AC32-128	North Carolina Supercomputing Center (NCSC) USA /1996	Academic	32	**12500** 19000	27936 3360
247	IBM SP2/64	InterUniversity Israel /1996	Academic	64	**12500** 17000	26500 7000
248	IBM SP2/64	University of Houston USA /1996	Academic	64	**12500** 17000	26500 7000
249	IBM SP2 P2 120MHz/35	Chase Manhatten New York USA /1996	Industry Database	35	**12420** 16800	. .
250	Sun Ultra HPC 6000	Southwest Bell St. Louis USA /1997	Industry	30	**12420** 15000	15700 4000
251	Intel XP/S-MP 15	ONERA Chatillon France /1995	Research Aerospace	294	**12250** 14700	. .
252	Intel XP/S-MP 14	Oak Ridge National Laboratory Oak Ridge USA /1995	Research	288	**12000** 14400	. .
253	IBM SP2/60	Tokyo Metropolitan University Tokyo Japan /1995	Academic	60	**11750** 15930	. .
254	Sun Ultra Enterprise 6000	Chase Manhatten London UK /1997	Industry	28	**11610** 14000	. .
255	Sun Ultra Enterprise 6000	Chase Manhatten London UK /1997	Industry	28	**11610** 14000	. .
256	Sun Ultra HPC 6000	KT Freetel Seoul Korea /1997	Industry	28	**11610** 14000	. .
257	NEC SX-3/24R	National Institute of Fusion Science (NIFS) Japan /1993	Research	2	**11600** 13000	4352 516
258	NEC SX-4/6	DIGICON Houston USA /1996	Industry Geophysics	6	**11510** 12000	. .
259	IBM SP2/64	Argonne National Laboratory USA /1996	Research	64	**11400** 17000	. .
260	IBM SP2 P2 120MHz/32	IBM - Thomas Watson Research Center - Deep Blue Yorktown Heights USA /1997	Research Chess	32	**11380** 15360	19500 4100

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N $_{world}$	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	**R$_{max}$** R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
261	Sun Ultra HPC 10000	American Airlines USA /1997	Industry	32	**11340** 16000	15000 2400
262	Sun Ultra HPC 10000	CENAPAD-MG/CO Brazil /1997	Research	32	**11340** 16000	15000 2400
263	Sun Ultra HPC 10000	Ecole Normale Superieure France /1997	Research	32	**11340** 16000	15000 2400
264	Sun Ultra HPC 10000	General Motors/Hughes Missile Systems Company Tuscon USA /1997	Industry Aerospace	32	**11340** 16000	15000 2400
265	Sun Ultra HPC 10000	General Motors/Hughes Missile Systems Company Tuscon USA /1997	Industry Aerospace	32	**11340** 16000	15000 2400
266	Sun Ultra HPC 10000	Micron Technology Boise USA /1997	Industry	32	**11340** 16000	15000 2400
267	Sun Ultra HPC 10000	Nippon Telegraph and Telephone (NTT) Tokyo Japan /1997	Industry	32	**11340** 16000	15000 2400
268	Sun Ultra HPC 10000	Nippon Telegraph and Telephone (NTT) Tokyo Japan /1997	Industry	32	**11340** 16000	15000 2400
269	Sun Ultra HPC 6000	Comdisco Carlstadt USA /1997	Industry	27	**11206** 13500	. .
270	Sun Ultra HPC 6000	Posten Alingsas Sweden /1997	Industry	27	**11206** 13500	. .
271	IBM SP2/56	BC Tel Canada /1996	Industry	56	**11010** 14870	. .
272	SGI/Cray Y-MP T916/8512	Chrysler Motors Company USA /1996	Industry Automotive	8	**10880** 14500	. .
273	SGI/Cray Y-MP T916/8256	Commissariat a l'Energie Atomique (CEA) Limeil France /1996	Research	8	**10880** 14500	. .
274	SGI/Cray Y-MP T916/8256	Merck Co USA /1997	Industry Chemistry	8	**10880** 14500	. .
275	Sun Ultra HPC 6000	Pratt and Whitney Hartford USA /1997	Industry	26	**10800** 13000	. .
276	Fujitsu VPP300/5	Fujitsu San Jose USA /1996	Vendor	5	**10720** 11000	. .
277	IBM SP2/54	Autozone Memphis USA /1995	Industry Database	54	**10640** 14340	. .
278	Fujitsu VPP500/7	Institute of Space Astronautical Science (ISAS) Tokyo Japan /1993	Research	7	**10525** 11200	. .
279	SGI/Cray ORIGIN 2000	Albert-Einstein-Institut - MPI Potsdam Germany /1996	Research	32	**10420** 12480	22000 4000
280	SGI/Cray ORIGIN 2000	BMW AG Muenchen Germany /1996	Industry Automotive	32	**10420** 12480	22000 4000

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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	SGI/Cray ORIGIN 2000	Boston University Boston USA /1996	Academic	32	**10420** 12480	22000 4000
282	SGI/Cray ORIGIN 2000	Boston University Boston USA /1997	Academic	32	**10420** 12480	22000 4000
283	SGI/Cray ORIGIN 2000	C4 / Centre Europeo del Parallelismo de Barcelona Barcelona Spain /1997	Academic	32	**10420** 12480	22000 4000
284	SGI/Cray ORIGIN 2000	Chalmers University of Technology Goteborg Sweden /1996	Academic	32	**10420** 12480	22000 4000
285	SGI/Cray ORIGIN 2000	Chalmers University of Technology Goteborg Sweden /1997	Academic	32	**10420** 12480	22000 4000
286	SGI/Cray ORIGIN 2000	DOD/CEWES Vicksburg USA /1996	Research	32	**10420** 12480	22000 4000
287	SGI/Cray ORIGIN 2000	E-Systems/Raytheon USA /1997	Industry	32	**10420** 12480	22000 4000
288	SGI/Cray ORIGIN 2000	E-Systems/Raytheon USA /1997	Industry	32	**10420** 12480	22000 4000
289	SGI/Cray ORIGIN 2000	Ecole Polytechnique Federale de Lausanne Lausanne Switzerland /1996	Academic	32	**10420** 12480	22000 4000
290	SGI/Cray ORIGIN 2000	Industrial Light Magic USA /1997	Industry Image Proc.	32	**10420** 12480	22000 4000
291	SGI/Cray ORIGIN 2000	Informix Menlo Park USA /1997	Industry Database	32	**10420** 12480	22000 4000
292	SGI/Cray ORIGIN 2000	Informix Menlo Park USA /1997	Industry Database	32	**10420** 12480	22000 4000
293	SGI/Cray ORIGIN 2000	Informix Menlo Park USA /1997	Industry Database	32	**10420** 12480	22000 4000
294	SGI/Cray ORIGIN 2000	Japan Information Processing Service Japan /1996	Industry	32	**10420** 12480	22000 4000
295	SGI/Cray ORIGIN 2000	Kyoto University Kyoto Japan /1996	Academic	32	**10420** 12480	22000 4000
296	SGI/Cray ORIGIN 2000	Kyoto University Kyoto Japan /1996	Academic	32	**10420** 12480	22000 4000
297	SGI/Cray ORIGIN 2000	Kyoto University Kyoto Japan /1996	Academic	32	**10420** 12480	22000 4000
298	SGI/Cray ORIGIN 2000	Kyoto University Kyoto Japan /1996	Academic	32	**10420** 12480	22000 4000
299	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
300	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000

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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	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
302	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
303	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
304	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
305	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
306	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
307	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
308	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
309	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
310	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
311	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
312	SGI/Cray ORIGIN 2000	Los Alamos National Laboratory Los Alamos USA /1996	Research	32	**10420** 12480	22000 4000
313	SGI/Cray ORIGIN 2000	NASA/Ames Research Center/NAS Mountain View USA /1997	Research Aerospace	32	**10420** 12480	22000 4000
314	SGI/Cray ORIGIN 2000	NASA/Ames Research Center/NAS Mountain View USA /1997	Research Aerospace	32	**10420** 12480	22000 4000
315	SGI/Cray ORIGIN 2000	NASA/Langley Research Center Langley USA /1997	Research	32	**10420** 12480	22000 4000
316	SGI/Cray ORIGIN 2000	NCSA Urbana-Champaign USA /1997	Research	32	**10420** 12480	22000 4000
317	SGI/Cray ORIGIN 2000	NCSA Urbana-Champaign USA /1997	Research	32	**10420** 12480	22000 4000
318	SGI/Cray ORIGIN 2000	NCSA Urbana-Champaign USA /1997	Research	32	**10420** 12480	22000 4000
319	SGI/Cray ORIGIN 2000	NCSA Urbana-Champaign USA /1997	Research	32	**10420** 12480	22000 4000
320	SGI/Cray ORIGIN 2000	Nara Institute of Science and Technology (NAIST) Japan /1997	Academic	32	**10420** 12480	22000 4000

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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	SGI/Cray ORIGIN 2000	Sandia National Labs Albuquerque USA /1997	Research	32	**10420** 12480	22000 4000
322	SGI/Cray ORIGIN 2000	Schlumberger Doll Research Ridgefield USA /1997	Industry Geophysics	32	**10420** 12480	22000 4000
323	SGI/Cray ORIGIN 2000	Silicon Graphics Cortaillod Switzerland /1996	Vendor Benchmarking	32	**10420** 12480	22000 4000
324	SGI/Cray ORIGIN 2000	Universidad Nacional Autonoma de Mexico Mexico /1997	Academic	32	**10420** 12480	22000 4000
325	SGI/Cray ORIGIN 2000	Universitaet Dresden Dresden Germany /1997	Academic	32	**10420** 12480	22000 4000
326	SGI/Cray ORIGIN 2000	Universitaet der Bundeswehr Muenchen Germany /1997	Academic	32	**10420** 12480	22000 4000
327	SGI/Cray ORIGIN 2000	University of Bergen Bergen Norway /1997	Academic	32	**10420** 12480	22000 4000
328	SGI/Cray ORIGIN 2000	University of Bergen Bergen Norway /1997	Academic	32	**10420** 12480	22000 4000
329	SGI/Cray ORIGIN 2000	University of Bergen Bergen Norway /1997	Academic	32	**10420** 12480	22000 4000
330	SGI/Cray ORIGIN 2000	University of Bergen Bergen Norway /1997	Academic	32	**10420** 12480	22000 4000
331	SGI/Cray ORIGIN 2000	University of California - Santa Barbara Santa Barbara USA /1997	Academic	32	**10420** 12480	22000 4000
332	SGI/Cray ORIGIN 2000	Wright-Patterson Air Force Base USA /1996	Research	32	**10420** 12480	22000 4000
333	SGI/Cray ORIGIN 2000	Wright-Patterson Air Force Base USA /1996	Research	32	**10420** 12480	22000 4000
334	SGI/Cray ORIGIN 2000	Wright-Patterson Air Force Base USA /1996	Research	32	**10420** 12480	22000 4000
335	SGI/Cray ORIGIN 2000	Wright-Patterson Air Force Base USA /1996	Research	32	**10420** 12480	22000 4000
336	SGI/Cray ORIGIN 2000	Wright-Patterson Air Force Base USA /1997	Research	32	**10420** 12480	22000 4000
337	SGI/Cray ORIGIN 2000	Wright-Patterson Air Force Base USA /1997	Research	32	**10420** 12480	22000 4000
338	SGI/Cray ORIGIN 2000	Wright-Patterson Air Force Base USA /1997	Research	32	**10420** 12480	22000 4000
339	Hewlett-Packard SPP1600/XA-64	Hewlett-Packard CXTC Richardson USA /1996	Vendor Benchmarking	64	**10402** 15360	. .
340	Sun Ultra HPC 6000	Tokyo Mitsubishi Bank London UK /1997	Industry	25	**10390** 12500	. .

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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/Cray Y-MP C916/12512	Ford Koeln Germany /1997	Industry Automotive	12	**10270** 11430	. .
342	SGI/Cray Y-MP C916/121024	SARA (Stichting Academisch Rekencentrum) Amsterdam Netherlands /1997	Academic	12	**10270** 11430	. .
343	SGI/Cray Y-MP C916/12256	Tokyo Institute of Technology Tokyo Japan /1995	Academic	12	**10270** 11430	. .
344	IBM SP2/45	Tokyo Denryoko Japan /1996	Industry	45	**10220** 13860	. .
345	Sun Berkley NOW	University of California at Berkeley Berkeley USA /1997	Academic	100	**10140** 33400	32768 8192
346	IBM SP2/51	Shell Intl. Petroleum Netherlands /1996	Industry Geophysics	51	**10090** 13540	. .
347	IBM SP2/51	ShopKo Stores Green Bay USA /1996	Industry Database	51	**10090** 13540	. .
348	Intel XP/S25	NAL Japan /1994	Research	336	**10000** 16800	. .
349	Intel XP/S25	NRAD USA /1994	Research	336	**10000** 16800	. .
350	Sun Ultra HPC 6000	Abbey National London UK /1997	Industry	24	**9992** 12000	15700 1632
351	Sun Ultra HPC 6000	Abbey National London UK /1997	Industry	24	**9992** 12000	15700 1632
352	Sun Ultra HPC 6000	Bundesamt fr Seeschiffahrt und Hydrographie (BSH) Hamburg Germany /1997	Research	24	**9992** 12000	15700 1632
353	Sun Ultra HPC 6000	CSX Jacksonville USA /1997	Industry	24	**9992** 12000	15700 1632
354	Sun Ultra HPC 6000	Disney World Lake Buena Vista USA /1997	Industry	24	**9992** 12000	15700 1632
355	Sun Ultra HPC 6000	OR Telematique Paris France /1997	Industry	24	**9992** 12000	15700 1632
356	Sun Ultra HPC 6000	OR Telematique Paris France /1997	Industry	24	**9992** 12000	15700 1632
357	Sun Ultra HPC 6000	S3 Santa Clara USA /1997	Industry	24	**9992** 12000	15700 1632
358	Sun Ultra HPC 6000	Weizman Research Institute Israel /1997	Research	24	**9992** 12000	15700 1632
359	IBM SP2/50	Deutsche Telekom AG Darmstadt Germany /1996	Industry Database	50	**9900** 13280	. .
360	IBM SP2/50	Federal Express USA /1995	Industry Database	50	**9900** 13280	. .

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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	IBM SP2/50	Nihon Genken Tokai Japan /1995	Research	50	**9900** 13280	. .
362	TMC CM-200/64k	Los Alamos National Laboratory Los Alamos USA / .	Research Energy	2048	**9800** 20000	29696 11264
363	TMC CM-200/64k	Los Alamos National Laboratory Los Alamos USA / .	Research Energy	2048	**9800** 20000	29696 11264
364	SGI/Cray Y-MP T916/7256	Chrysler Motors Company USA /1997	Industry Automotive	7	**9590** 12600	. .
365	IBM SP2/48	Ensign UK /1996	Industry Geophysics	48	**9530** 12750	. .
366	IBM SP2/48	Institute of Math and Statistics Japan /1995	Research	48	**9530** 12750	. .
367	IBM SP2/48	NASA/Langley Research Center Hampton USA /1994	Research	48	**9530** 12750	. .
368	IBM SP2/48	Okazaki Bunshi Ken Japan /1994	Research	48	**9530** 12750	. .
369	IBM SP2/48	PCS Inc USA /1996	Industry	48	**9530** 12750	. .
370	IBM SP2/48	Rika dai Japan /1996	Academic	48	**9530** 12750	. .
371	IBM SP2/48	University of Michigan Michigan USA /1996	Academic	48	**9530** 12750	. .
372	SGI/Cray T3E AC24-128	TU Berlin Berlin Germany /1996	Research	24	**9420** 14400	. .
373	SGI/Cray T3E AC24-128	Universitaet Hannover / RRZN Germany /1996	Academic	24	**9420** 14400	. .
374	SGI/Cray POWER CHALLENGEarray	Government USA /1995	Classified	40	**9398** 14400	27000 6775
375	SGI/Cray POWER CHALLENGEarray	Government USA /1995	Classified	40	**9398** 14400	27000 6775
376	SGI/Cray ORIGIN 2000	Kobe Univeristy Kobe Japan /1996	Academic	28	**9170** 10920	. .
377	SGI/Cray ORIGIN 2000	Princeton University Princeton USA /1996	Academic	28	**9170** 10920	. .
378	IBM SP2/46	Tohoku University, Kohgaku-bu Aramaki Japan /1996	Academic	46	**9160** 12210	. .
379	IBM SP2/46	Western Geophysical UK /1997	Industry Geophysics	46	**9160** 12210	. .
380	Sun Ultra HPC 6000	GlaxoWellcom Raleigh USA /1997	Industry Pharmaceutics	22	**9160** 11000	. .

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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	Fujitsu VPP500/6	Fujitsu Ltd. Numazu Japan /1996	Vendor	6	**9050** 9600	. .
382	IBM SP2/44	C4 / Centre de Supercomputacio de Catalunya Barcelona Spain /1996	Academic	44	**8790** 11680	. .
383	Sun Ultra HPC 6000	Cincinnati Bell Information Systems (CBIS) Cleveland USA /1997	Industry	21	**8750** 11500	. .
384	Sun Ultra HPC 6000	European Commission Luxembourg /1997	Classified	21	**8750** 11500	. .
385	Fujitsu VPP300/4	ECMWF Reading UK /1996	Research Weather	4	**8600** 8800	28800 1280
386	Fujitsu VX/4	Fujitsu (FECIT) Uxbridge UK /1996	Vendor	4	**8600** 8800	28800 1280
387	Fujitsu VPP300/4	SNECMA France /1997	Industry Aerospace	4	**8600** 8800	28800 1280
388	Fujitsu VX/4	Shimizu Corporation Tokyo Japan /1996	Academic	4	**8600** 8800	28800 1280
389	Fujitsu VX/4	Tokyo Metropolitan University Tokyo Japan /1996	Academic	4	**8600** 8800	28800 1280
390	Fujitsu/SNI VPP300/4	Universitaet Hannover / RRZN Hannover Germany /1996	Academic	4	**8600** 8800	28800 1280
391	Fujitsu VPP300/4	Western Geophysical Houston USA /1996	Industry Geophysics	4	**8600** 8800	28800 1280
392	IBM SP2 P2 120MHz/24	Maui Research and Technology Center (MRTC) USA /1996	Industry	24	**8570** 11520	. .
393	SGI/Cray POWER CHALLENGEarray	DOD/CEWES Vicksburg USA /1996	Research	36	**8470** 12960	. .
394	SGI/Cray POWER CHALLENGEarray	Naval Oceanographic Office (NAVOCEANO) Stennis Space Center USA /1996	Research Aerospace	36	**8470** 12960	. .
395	IBM SP2/42	Chuodai Riko Japan /1996	Academic	42	**8420** 11150	. .
396	IBM SP2/42	Federal Express USA /1996	Industry Database	42	**8420** 11150	. .
397	IBM SP2/42	Fidelity Investments USA /1995	Industry Finance	42	**8420** 11150	. .
398	Sun Ultra HPC 6000	ARAMCO Saudi Arabia /1997	Industry Geophysics	20	**8340** 10000	. .
399	Sun Ultra HPC 6000	British Gas Couventry UK /1997	Industry	20	**8340** 10000	. .
400	Sun Ultra HPC 6000	British Gas Couventry UK /1997	Industry	20	**8340** 10000	. .

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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	Sun Ultra HPC 6000	Deutsche Bahn AG Berlin Germany /1997	Industry	20	**8340** 10000	. .
402	Sun Ultra HPC 6000	Deutsche Bahn AG Berlin Germany /1997	Industry	20	**8340** 10000	. .
403	Sun Ultra HPC 6000	Finaref France /1997	Industry	20	**8340** 10000	. .
404	Sun Ultra HPC 6000	KT Freetel Seoul Korea /1997	Industry	20	**8340** 10000	. .
405	Sun Ultra HPC 6000	KT Freetel Seoul Korea /1997	Industry	20	**8340** 10000	. .
406	Sun Ultra HPC 6000	LSI Logic Milpitas USA /1997	Industry	20	**8340** 10000	. .
407	Sun Ultra HPC 6000	MRC UK /1997	Industry	20	**8340** 10000	. .
408	Sun Ultra HPC 6000	Morse Computer London UK /1997	Industry	20	**8340** 10000	. .
409	Sun Ultra HPC 6000	PP Manchester UK /1997	Industry	20	**8340** 10000	. .
410	Sun Ultra HPC 6000	SAP Walldorf Germany /1997	Industry	20	**8340** 10000	. .
411	SGI/Cray Y-MP T916/6512	Naval Oceanographic Office (NAVOCEANO) Bay Saint Louis USA /1996	Research	6	**8300** 10850	. .
412	SGI/Cray POW CHALLarray 10000	NCSA Urbana-Champaign USA /1996	Research	72	**8233** 28080	. .
413	SGI/Cray POW CHALLarray 10000	NCSA Urbana-Champaign USA /1996	Research	72	**8233** 28080	. .
414	SGI/Cray POWER CHALLENGE 10000	Biomolecular Eng. Research Institute Suita Japan /1996	Research	32	**8233** 12480	16000 4000
415	SGI/Cray POWER CHALLENGE 10000	Kyoto University Kyoto Japan /1996	Academic	32	**8233** 12480	16000 4000
416	SGI/Cray POWER CHALLENGE 10000	Kyoto University Kyoto Japan /1996	Academic	32	**8233** 12480	16000 4000
417	IBM SP2/41	ISSC, Unisource USA /1996	Industry	41	**8230** 10890	. .
418	IBM SP2/41	Petro Canada Canada /1995	Industry Geophysics	41	**8230** 10890	. .
419	IBM SP2/40	National Cancer Research Institute Tokyo Japan /1994	Research	40	**8050** 10620	. .
420	IBM SP2/40	Seoul National University Seoul Korea /1995	Academic	40	**8050** 10620	. .

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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 SP2/40	UNI-C/Lyngby Denmark /1995	Academic	40	**8050** 10620	. .
422	Parsytec GC PowerPlus/192	Universitaet Heidelberg - IWR Heidelberg Germany /1995	Academic	192	**7999** 15360	27192 9500
423	Parsytec GC PowerPlus/192	Universitaet Paderborn - PC2 Paderborn Germany /1995	Academic	192	**7999** 15360	27192 9500
424	IBM SP2/35	ARAMCO Saudi Arabia /1996	Industry Geophysics	35	**7970** 10780	. .
425	SGI/Cray ORIGIN 2000	Baylor College of Medicine Houston USA /1996	Academic	24	**7928** 9360	19000 3500
426	SGI/Cray ORIGIN 2000	Chinese University of Hong Kong Hong Kong Hong Kong /1996	Academic	24	**7928** 9360	19000 3500
427	SGI/Cray ORIGIN 2000	Keio Univeristy Japan /1997	Academic	24	**7928** 9360	19000 3500
428	SGI/Cray ORIGIN 2000	NRC's Steacie Institute for Molecular Sciences Ottawa Canada /1996	Research	24	**7928** 9360	19000 3500
429	SGI/Cray ORIGIN 2000	Pratt and Whitney Canada /1996	Industry Aerospace	24	**7928** 9360	19000 3500
430	SGI/Cray ORIGIN 2000	Sony Pictures USA /1997	Industry Image Proc.	24	**7928** 9360	19000 3500
431	SGI/Cray ORIGIN 2000	Volvo Gothenberg Sweden /1996	Industry Automotive	24	**7928** 9360	19000 3500
432	Hewlett-Packard SPP1600/XA-48	Universitaet Erlangen Erlangen Germany /1996	Academic	48	**7920** 11520	. .
433	Sun Ultra HPC 6000	Visa San Mateo USA /1997	Industry	19	**7920** 9500	. .
434	IBM SP2/39	Burnham Service Corporation USA /1996	Industry	39	**7860** 10350	. .
435	IBM SP2/39	Western Geophysical Houston USA /1997	Industry Geophysics	39	**7860** 10350	. .
436	SGI/Cray POWER CHALLENGEarray	Government USA /1995	Classified	40	**7831** 12000	27000 6775
437	SGI/Cray POWER CHALLENGEarray	Government USA /1995	Classified	40	**7831** 12000	27000 6775
438	SGI/Cray POWER CHALLENGEarray	Government USA /1995	Classified	40	**7831** 12000	27000 6775
439	Hewlett-Packard Exemplar S-Class	Advanced Data Solution Houston USA /1997	Industry	16	**7783** 11500	13320 1044
440	Hewlett-Packard Exemplar S-Class	Arnold Engineering Development Center (AEDC) Arnold AFB USA /1997	Classified	16	**7783** 11500	13320 1044

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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	Hewlett-Packard Exemplar S-Class	Centro Informatico Cientifico de Andalucia (CICA) Spain /1997	Academic	16	**7783** 11500	13320 1044
442	Hewlett-Packard Exemplar S-Class	Colsa Huntsville USA /1997	Industry	16	**7783** 11500	13320 1044
443	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
444	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
445	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
446	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
447	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
448	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
449	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
450	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
451	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
452	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1996	Industry AFIS	16	**7783** 11500	13320 1044
453	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
454	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
455	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
456	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
457	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
458	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
459	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
460	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044

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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	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
462	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
463	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
464	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
465	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
466	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
467	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
468	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
469	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
470	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
471	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
472	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
473	Hewlett-Packard Exemplar S-Class	Defense Contractor Orlando USA /1997	Industry AFIS	16	**7783** 11500	13320 1044
474	Hewlett-Packard Exemplar S-Class	Donaldson Bloomington USA /1997	Industry	16	**7783** 11500	13320 1044
475	Hewlett-Packard Exemplar S-Class	ELF Aquitaine Pau France /1997	Industry Geophysics	16	**7783** 11500	13320 1044
476	Hewlett-Packard Exemplar S-Class	EPPA Spain /1997	Industry	16	**7783** 11500	13320 1044
477	Hewlett-Packard Exemplar S-Class	Electronic Warfare Associates (EWA) Herndon USA /1997	Industry	16	**7783** 11500	13320 1044
478	Hewlett-Packard Exemplar S-Class	Hewlett-Packard CXTC Richardson USA /1996	Vendor Benchmarking	16	**7783** 11500	13320 1044
479	Hewlett-Packard Exemplar S-Class	NCSA Urbana-Champaign USA /1996	Academic	16	**7783** 11500	13320 1044
480	Hewlett-Packard Exemplar S-Class	Naval Research Laboratory (NRL) Washington D.C. USA /1997	Classified	16	**7783** 11500	13320 1044

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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	Hewlett-Packard Exemplar S-Class	Raytheon Lexington USA /1997	Industry	16	**7783** 11500	13320 1044
482	Hewlett-Packard Exemplar S-Class	Rice University Houston USA /1997	Academic	16	**7783** 11500	13320 1044
483	Hewlett-Packard Exemplar S-Class	Rice University Houston USA /1997	Academic	16	**7783** 11500	13320 1044
484	Hewlett-Packard Exemplar S-Class	SNPE France /1997	Industry	16	**7783** 11500	13320 1044
485	Hewlett-Packard Exemplar S-Class	Universitaet Bielefeld Bielefeld Germany /1997	Academic	16	**7783** 11500	13320 1044
486	Hewlett-Packard Exemplar S-Class	Universitaet Duisburg Duisburg Germany /1997	Academic	16	**7783** 11500	13320 1044
487	Hewlett-Packard Exemplar S-Class	Yukawa Institute for Theoretical Physics (YITP) Japan /1997	Academic	16	**7783** 11500	13320 1044
488	Hewlett-Packard Exemplar X-Class	Kodak Rochester USA /1997	Industry	16	**7783** 11500	13320 1044
489	Hewlett-Packard Exemplar X-Class	Martin-Luther Universitaet Halle-Wittenberg Halle Germany /1997	Academic	16	**7783** 11500	13320 1044
490	Hewlett-Packard Exemplar X-Class	Martin-Luther Universitaet Halle-Wittenberg Halle Germany /1997	Academic	16	**7783** 11500	13320 1044
491	Hewlett-Packard Exemplar X-Class	NCAR (National Center for Atmospheric Research) Boulder USA /1997	Research Weather	16	**7783** 11500	13320 1044
492	Hewlett-Packard Exemplar X-Class	NCAR (National Center for Atmospheric Research) Boulder USA /1997	Research Weather	16	**7783** 11500	13320 1044
493	Hewlett-Packard Exemplar X-Class	Sharp Osaka Japan /1997	Industry	16	**7783** 11500	13320 1044
494	Hewlett-Packard Exemplar X-Class	University of California - Irvine Irvine USA /1997	Academic	16	**7783** 11500	13320 1044
495	TMC CM-5E/128	The Angstrom Technology Partnership Tsukuba Japan /1994	Research	128	**7700** 20000	18432 8192
496	TMC CM-5/128	Institut de Physique du Globe de Paris (IPG) Paris France /1992	Research	128	**7700** 16000	18432 8192
497	TMC CM-5/128	MIT Cambridge USA / .	Research	128	**7700** 16000	18432 8192
498	IBM SP2/38	GMD Germany /1995	Research	38	**7680** 10090	. .
499	IBM SP2/38	Kirin Beer Japan /1996	Industry Database	38	**7680** 10090	. .
500	IBM SP2/38	UCLA Los Angeles USA /1994	Academic	38	**7680** 10090	. .

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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], 1995 [5] and, 1996 [6]). 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	130	50	20	4	204
Cray only	63	35	9	2	109
SGI only	67	15	11	2	95
IBM	37	18	11	4	70
Hewlett-Packard	54	11	2		67
Sun	25	22	4	9	60
Fujitsu	2	10	21	1	34
NEC	4	6	14		24
Hitachi		1	12		13
Intel	9	2	2		13
TMC	9	1	1		11
others	2	2			4
Total	272	123	87	18	500

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

TOP500 Statistics — Installed R_{max} [Gflop/s]					
	USA/Canada	Europe	Japan	others	Total
SGI/Cray	3114.2	1953.2	327.2	101.3	5495.9
Cray only	2335.2	1790.6	222.9	83.0	4431.7
SGI only	779.0	162.6	104.3	18.3	1064.2
IBM	1023.5	253.4	107.6	43.8	1428.3
Hewlett-Packard	473.5	100.2	15.6		589.3
Sun	342.3	220.6	60.7	103.9	727.4
Fujitsu	19.3	283.1	1009.8	27.7	1339.9
NEC	85.4	185.5	518.3		789.3
Hitachi		22.2	835.0		857.1
Intel	1438.5	31.0	113.5		1583.0
TMC	215.0	7.7	7.7		230.4
others	49.4	16.0			65.4
Total	6761.1	3072.9	2995.3	276.7	13106

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

TOP500 Statistics — Installed R_{peak} [Gflop/s]					
	USA/Canada	Europe	Japan	others	Total
SGI/Cray	4692.0	3319.2	482.5	152.2	8646.0
Cray only	3671.2	3122.6	349.9	130.4	7274.2
SGI only	1020.8	196.6	132.6	21.8	1371.8
IBM	1521.0	354.8	144.5	59.7	2080.0
Hewlett-Packard	992.4	167.5	23.0		1182.9
Sun	494.9	275.5	88.0	138.0	996.4
Fujitsu	19.8	297.0	1141.4	28.6	1486.8
NEC	92.0	195.5	548.5		836.0
Hitachi		28.8	1215.0		1243.8
Intel	1935.5	37.2	141.9		2114.6
TMC	470.8	16.0	20.0		506.8
others	126.7	30.7			157.4
Total	10345	4722.2	3804.8	378.5	19251

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