

TOP500 Supercomputers

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RUM 33/93

July 1,1993

Abstract

In order to get a better basis for Statistics on Supercomputers, the 500 most powerful computer systems installed are listed in this article. As a performance measure, we use the best LINPACK performance achieved [1].

1 Introduction and Objectives

There is a big interest in Statistics on Supercomputers, by manufacturers as well as by customers and potential customers who want to find out, e.g. whether there is a large number of a certain system installed or not. Not only the pure number of systems installed in the different parts of the world is of interest but also their location to the High Performance Computing community since contacting each other and exchange of information is being made easier. By such statistics other questions of interest may be answered, e.g. the field of applications, the top computers in a specific country, etc.

Every year since 1986, Hans Meuer published statistics on the supercomputer market primarily based on system counts of the major vector computer manufacturers at the *Mannheim Supercomputer Seminar* [2]. Due to diversification of the product spectrum, due to the increasing availability of MPP systems, and due to the strong increase in computing power of the high end models of workstation suppliers, statistics based on the name of the manufacturer only are no longer meaningful. The difference between low-end and high-end models is much too big, as far as performance is concerned. Another problem is the one with supercomputers of the past, e.g. Fujitsu VP100 or Cray XMP. Should they be included or not?

That's why we decided to assemble and maintain such a list of the 500 most powerful computer systems. Since this is quite difficult, we asked experts in the field on all continents, manufacturers and the Internet community to participate in this effort, and we got a surprisingly high amount of positive response. We would like to thank all contributors for their cooperation. We have also used parts of similar lists published by others for different purposes [3] [4].

Note that entering the TOP500 list is independent of a specific computer architecture. In the present list only vector computers and MPP-systems are represented, but of course we are prepared to include RISC based MP-workstations, e.g. DEC Alpha AXP and SGI Power Challenge if the requested data are available and installations are published

We are planning to update this list on a quarterly basis, and, by this, we hope to keep track with the evolution of computers and to keep the quality of the list up. For doing so, any comments and information are highly appreciated. Please send electronic mail to:

top500@rz.uni-mannheim.de

2 The LINPACK Benchmark

As a yardstick of performance we have chosen the best LINPACK Benchmark performance achieved, since it is the most widely spread and used benchmark. So, for almost all systems in question performance numbers are available. The LINPACK Benchmark was introduced by Jack Dongarra [1]. A detailed description as well as a list of performances achieved is available from netlib by sending electronic mail to *netlib@ornl.gov* and by typing the message:

send performance from benchmark

The problem used in the LINPACK Benchmark is to solve a dense system of linear equations. We decided to use the version of the benchmark, where you are allowed to scale the size of the problem and to optimize the code in order to achieve the best performance for it. **This performance does not reflect the overall performance of a given system**, as no single number ever can. It reflects the performance of a dedicated system for solving a dense system of linear equations. As it is a very regular problem, the performances achieved are quite high but they give a good correction of the peak performance cited so often. By measuring the performance for different problem sizes N , you 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 three numbers together with the theoretical peak performance R_{peak} are the numbers given in the TOP500 List.

If in the future, a more realistic benchmark will find a similar widespread usage, so that numbers for all systems in question would be available, we might decide to switch to this performance measure, but we don't see a possibility yet.

3 The TOP500 List

The following 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:

• 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
• 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 the table 3 of the LINPACK Report [1] is not available, we use the TPP-performance given in table 1 [1] for solving a system of 1000 equations. In a few cases we interpolated between two measured system sizes or we scaled by cycle times. For models where we didn't get the requested data (e.g. Hitachi S3800/480, KSR1-256, bigger models of Paragon XPS) the performance of the next smaller system measured is used.

In this version of the list, we have not included:

IBM Systems We only know a handful of installations and they do not seem to be representative at all. The following IBM systems fulfill the minimum R_{max} requirement for the present TOP500 list: a couple of ES/9000 VF systems, depending on cycle time and the number of processors and also the 3090J VF models with 5 or 6 processors. We can only speculate that 20 to 40 of these systems are installed worldwide and invite herewith IBM and IBM customers to enter our competition.

Workstation Clusters The definition and separation for this kind of distributed parallel computing systems is still quite high. We might publish a smaller separate list for them in the future.

The ordering criterion of the TOP500 list is R_{max} . For equal performances, we have chosen R_{peak} , the computer type and the installation site as secondary ordering criteria. This does not reflect any difference in quality for us.

Table 1: TOP500 List

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	Thinking Machines CM-5/1024	Los Alamos National Laboratory Los Alamos USA / .	Research Energy	1024	59700 131000	52224 24064
2	Thinking Machines CM-5/1024	National Security Agency USA / .	Classified	1024	59700 131000	52224 24064
3	Thinking Machines CM-5/544	Minnesota Supercomputer Center USA / .	Academic	544	30400 70000	36864 16384
4	Thinking Machines CM-5/512	NCSA Urbana-Champaign USA / .	Academic	512	30400 66000	36864 16384
5	NEC SX-3/44R	NEC Fuchu Plant Japan /1990	Vendor	4	23200 26000	6400 830
6	NEC SX-3/44	Atmospheric Environment Service (AES) Dorval Canada /1991	Research Weather	4	20000 22000	6144 832
7	Thinking Machines CM-5/256	US Naval Research Laboratory USA /1992	Research	256	15100 33000	26112 12032
8	Intel Delta	Caltch Pasadena USA / .	Academic	512	13900 20000	25000 7500
9	Cray Research Y-MP C916/16256	Cray Research Eagan USA / .	Vendor	16	13700 15238	10000 650
10	Cray Research Y-MP C916/16256	DOE/Bettis Atomic Power Laboratory USA /1993	Research	16	13700 15238	10000 650
11	Cray Research Y-MP C916/16256	DOE/Knolls Atomic Power Laboratory USA /1993	Research	16	13700 15238	10000 650
12	Cray Research Y-MP C916/16128	ECMWF Reading UK /1993	Research Weather	16	13700 15238	10000 650
13	Cray Research Y-MP C916/161024	Government USA /1992	Classified	16	13700 15238	10000 650
14	Cray Research Y-MP C916/161024	Government USA /1992	Classified	16	13700 15238	10000 650
15	Cray Research Y-MP C916/161024	Government USA /1992	Classified	16	13700 15238	10000 650
16	Cray Research Y-MP C916/161024	Government USA /1992	Classified	16	13700 15238	10000 650
17	Cray Research Y-MP C916/16256	Lawrence Livermore National Laboratory NERSC USA /1992	Research Energy	16	13700 15238	10000 650
18	Cray Research Y-MP C916/16256	NASA/Ames Research Center/NAS Moffett Field USA /1993	Research	16	13700 15238	10000 650
19	Cray Research Y-MP C916/16256	Pittsburgh Supercomputing Center Pittsburgh USA /1992	Academic	16	13700 15238	10000 650
20	Cray Research Y-MP C916/16512	US Army Waterways Experiment Station Vicksburg USA /1993	Research Mechanics	16	13700 15238	10000 650

Mannheim July 1, 1993

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N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
21	Cray Research Y-MP C916	US Naval Oceanographic Command Bay Saint Louis USA / .	Research Weather	16	13700 15238	10000 650
22	NEC SX-3/24R	National Institute of Fusion Science (NIFS) Japan /1993	Research	2	11600 13000	4352 516
23	NEC SX-3/24	NEC Daito Supercomputer Center Japan /1991	Vendor	2	10000 11000	4352 500
24	Thinking Machines CM-200/64k	Los Alamos National Laboratory Los Alamos USA / .	Research Energy	2048	9800 20000	29696 11264
25	Thinking Machines CM-200/64k	Los Alamos National Laboratory Los Alamos USA / .	Research Energy	2048	9800 20000	29696 11264
26	Thinking Machines CM-5/128	Institut de Physique du Globe de Paris (IPG) Paris France /1992	Research	128	7700 16000	18432 8192
27	Thinking Machines CM-5/128	MIT Cambridge USA / .	Research	128	7700 16000	18432 8192
28	Thinking Machines CM-5/128	NASA/Ames Research Center/NAS Moffett Field USA /1993	Research	128	7700 16000	18432 8192
29	Thinking Machines CM-5/128	Schlumberger Well Services USA /1992	Industry Geophysics	128	7700 16000	18432 8192
30	Cray Research Y-MP C916/8256	Ford Motor Company Dearborn USA /1992	Industry Automotive	8	6850 7619	. .
31	Cray Research Y-MP C916/8256	Minnesota Supercomputer Center USA / .	Academic	8	6850 7619	. .
32	Cray Research Y-MP C916/8256	NASA/Ames Research Center/CCF Moffett Field USA /1993	Research Aerospace	8	6850 7619	. .
33	Cray Research Y-MP C916/8128	US Navy/Fleet Numerical Oceanography Center Monterey USA /1992	Research Weather	8	6850 7619	. .
34	NEC SX-3/41R	Japan Atomic Energy Research Japan /1992	Research	4	5800 6400	3584 414
35	NEC SX-3/14R	Osaka University Osaka Japan /1993	Academic	1	5800 6400	2816 282
36	NEC SX-3/14R	Toyota Central Research Japan /1992	Industry Automotive	1	5800 6400	2816 282
37	Hitachi S-3800/480	Tokyo University Tokyo Japan /1993	Academic	4	5715 32000	. .
38	Thinking Machines CM-2/64k	Brandeis University USA / .	Academic	2048	5200 14000	26624 11000
39	Thinking Machines CM-2/64k	Florida State University Tallahassee USA / .	Academic	2048	5200 14000	26624 11000
40	Thinking Machines CM-200/32k	Minnesota Supercomputer Center USA / .	Academic	1024	5000 10000	21504 8192

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41	NEC SX-3/22	Houston Advanced Research Center Houston USA / .	Research	2	5000 5500	3072 384
42	NEC SX-3/14	IBM Japan Tokyo Japan /1991	Industry Electronics	1	5000 5500	3072 384
43	NEC SX-3/22	National Aerospace Laboratory (NLR) Netherlands/1992	Research Aerospace	2	5000 5500	3072 384
44	NEC SX-3/14	National Institute of Environmental Studies Japan /1992	Research Environment	1	5000 5500	3072 384
45	NEC SX-3/22	Swiss Scientific Computing Center Manno Switzerland/1991	Research	2	5000 5500	3072 384
46	Fujitsu VP2600/10	Fuji Heavy Japan /1990	Industry Heavy Ind.	1	4009 5000	. .
47	Fujitsu VP2600/10	Japan Atomic Energy Research Japan /1991	Research	1	4009 5000	. .
48	Fujitsu VP2600/10	Japan Atomic Energy Research Japan /1991	Research	1	4009 5000	. .
49	Fujitsu VP2600/20	Kyoto University Kyoto Japan /1990	Academic	1	4009 5000	. .
50	Fujitsu VP2600/10	Kyushu University Kyushu Japan /1992	Academic	1	4009 5000	. .
51	Fujitsu VP2600/10	NAL (Space Technology) Japan /1990	Research	1	4009 5000	. .
52	Fujitsu VP2600/10	Nagoya University Nagoya Japan /1991	Academic	1	4009 5000	. .
53	Fujitsu VP2600/10	Reactor Nuclear Fuel Development Japan /1991	Research	1	4009 5000	. .
54	Fujitsu VP2600/10	Reactor Nuclear Fuel Development Japan /1991	Research	1	4009 5000	. .
55	Fujitsu VP2600/10	Taisei Construction Japan /1992	Industry Construction	1	4009 5000	. .
56	Siemens-Nixdorf S600/20	Universitaet Aachen Aachen Germany /1991	Academic	1	4009 5000	. .
57	Siemens-Nixdorf S600/20	Universitaet Karlsruhe Karlsruhe Germany /1990	Academic	1	4009 5000	. .
58	Thinking Machines CM-5/64	ATR Kyoto Japan / .		64	3800 8000	13056 6016
59	Thinking Machines CM-5/64	Boston University Boston USA / .	Academic	64	3800 8000	13056 6016
60	Thinking Machines CM-5/64	GMD Birlinghoven Germany /1993	Research	64	3800 8000	13056 6016

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61	Thinking Machines CM-5/64	Japanese AIST Hokuriku Japan /1993		64	3800 8000	13056 6016
62	Thinking Machines CM-5/64	Mobil / Technical Center Tulsa USA /1992	Industry Geophysics	64	3800 8000	13056 6016
63	Thinking Machines CM-5/64	Real World Computing (RWCP) Tokyo Japan /1992		64	3800 8000	13056 6016
64	Thinking Machines CM-5/64	University of Wisconsin USA / .	Academic	64	3800 8000	13056 6016
65	Siemens-Nixdorf S400/40	Universitaet Darmstadt Darmstadt Germany /1991	Academic	2	3624 5000	10239 .
66	Siemens-Nixdorf S400/40	Universitaet Hannover Hannover Germany /1991	Academic	2	3624 5000	10239 .
67	KSR KSR1-256	KSR Boston USA /1992	Vendor	256	3380 10240	10240 1824
68	KSR KSR1-256	US Army Research Laboratory Aberdeen USA /1993	Research	256	3380 10240	10240 1824
69	KSR KSR1-128	Cornell Theory Center Ithaca USA /1992	Academic	128	3380 5120	10240 1824
70	Intel XP/S15	Intel SSD Development Centers USA /1993	Vendor	208	3300 10400	10000 .
71	Intel XP/S15	NASA/Ames Research Center/NAS Moffett Field USA /1992	Research	208	3300 10400	10000 .
72	Intel XP/S10	Intel SSD Development Centers USA /1992	Vendor	140	3300 7000	10000 .
73	NEC SX-3/12R	Institute of Space Science (INPE) Brazil /1993	Research Weather	1	2900 3200	2048 174
74	NEC SX-3/12R	NEC Scientific Information (NSIS) Japan /1992	Research	1	2900 3200	2048 174
75	NEC SX-3/21R	Obayashi Corporation Japan /1992	Industry	2	2900 3200	2560 257
76	Thinking Machines CM-2/32k	AMK Bonn Germany /1990	Classified	1024	2600 7000	. .
77	Intel iPSC/860	Alliant Techsystems Inc. USA /1990	Industry Biochemistry	128	2600 5000	12000 4500
78	Intel iPSC/860	Grant Tensor UK /1991	Industry Geophysics	128	2600 5000	12000 4500
79	Intel iPSC/860	Grant Tensor USA /1991	Industry Geophysics	128	2600 5000	12000 4500
80	Intel iPSC/860	Grant Tensor Houston USA /1992	Industry Geophysics	128	2600 5000	12000 4500

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N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
81	Intel iPSC/860	Honeywell USA /1990	Industry	128	2600 5000	12000 4500
82	Intel iPSC/860	Lockheed Advanced Development Palmdale USA /1992	Industry Aerospace	128	2600 5000	12000 4500
83	Intel iPSC/860	NASA/Ames Research Center/NAS Moffett Field USA /1990	Research	128	2600 5000	12000 4500
84	Intel iPSC/860	NIH Frederick USA /1990	Research	128	2600 5000	12000 4500
85	Intel iPSC/860	ONERA France /1991	Research Aerospace	128	2600 5000	12000 4500
86	Intel iPSC/860	Oak Ridge National Laboratory Oak Ridge USA /1989	Research	128	2600 5000	12000 4500
87	Thinking Machines CM-200/16k	INRIA - Sophia Antipolis Rennes France /1992	Research	512	2400 5000	14848 5632
88	Thinking Machines CM-200/16k	US Naval Research Laboratory USA /1987	Research	512	2400 5000	14848 5632
89	Thinking Machines CM-200/16k	University of Edinburgh Edinburgh UK / .	Research	512	2400 5000	14848 5632
90	Cray Research CRAY-2s/8-128	Lawrence Livermore National Laboratory NERSC USA /1990	Research Energy	8	2171 3902	. .
91	Cray Research Y-MP8E/8256	Arabian American Oil Company USA /1991	Industry Geophysics	8	2144 2667	. .
92	Cray Research Y-MP8/864	Atomic Weapons Establishment USA /1990	Classified	8	2144 2667	. .
93	Cray Research Y-MP8/8128	Cray Research Eagan USA / .	Vendor	8	2144 2667	. .
94	Cray Research Y-MP8/8128	Cray Research Eagan USA / .	Vendor	8	2144 2667	. .
95	Cray Research Y-MP8/832	Cray Research Eagan USA / .	Vendor	8	2144 2667	. .
96	Cray Research Y-MP8/864	DOE/Bettis Atomic Power Laboratory USA /1990	Research	8	2144 2667	. .
97	Cray Research Y-MP8/864	DOE/Knolls Atomic Power Laboratory USA /1990	Research	8	2144 2667	. .
98	Cray Research Y-MP8/8256	DOE/National Security Agency USA / .	Classified	8	2144 2667	. .
99	Cray Research Y-MP8/864	Government Communications Headquarters Benhall UK / .	Classified	8	2144 2667	. .
100	Cray Research Y-MP8/832	KFA Juelich Germany /1989	Research	8	2144 2667	. .

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101	Cray Research Y-MP8/8128	Lawrence Livermore National Laboratory Livermore USA /1991	Research	8	2144 2667	. .
102	Cray Research Y-MP8/864	Lawrence Livermore National Laboratory Livermore USA /1992	Research	8	2144 2667	. .
103	Cray Research Y-MP8/864	Leibniz Rechenzentrum Muenchen Germany /1992	Academic	8	2144 2667	. .
104	Cray Research Y-MP8/8128	Los Alamos National Laboratory Los Alamos USA /1992	Research Energy	8	2144 2667	. .
105	Cray Research Y-MP8/8128	Los Alamos National Laboratory Los Alamos USA /1992	Research Energy	8	2144 2667	. .
106	Cray Research Y-MP8/864	Los Alamos National Laboratory Los Alamos USA /1992	Research Energy	8	2144 2667	. .
107	Cray Research Y-MP8/864	NASA/Goddard Space Flight Center Greenbelt USA /1993	Research Weather	8	2144 2667	. .
108	Cray Research Y-MP8E/8256	NASA/Langley Research Center Hampton USA /1992	Research	8	2144 2667	. .
109	Cray Research Y-MP8/8128	NASA/Lewis Research Center USA /1991	Research	8	2144 2667	. .
110	Cray Research Y-MP8/832	NOAA USA /1990	Research Weather	8	2144 2667	. .
111	Cray Research Y-MP8/832	NOAA/GFDL USA /1990	Research Weather	8	2144 2667	. .
112	Cray Research Y-MP8/8128	National Cancer Institute USA /1991	Research Chemistry	8	2144 2667	. .
113	Cray Research Y-MP8/864	National Center for Atmospheric Research Boulder USA /1990	Research Weather	8	2144 2667	. .
114	Cray Research Y-MP8E/8128	Navy POPS Supercomputing Facility Saint Louis USA / .	Research Weather	8	2144 2667	. .
115	Cray Research Y-MP8/864	Ohio Supercomputer Center Columbus USA /1989	Academic	8	2144 2667	. .
116	Cray Research Y-MP8/864	Sandia National Labs Albuquerque USA / .	Research	8	2144 2667	. .
117	Cray Research Y-MP8/8128	Tohoku University, Institute of Fluid Science Aramaki Japan /1992	Academic	8	2144 2667	. .
118	Cray Research Y-MP8/864	UCSD/San Diego Supercomputer Center San Diego USA /1989	Academic	8	2144 2667	. .
119	Cray Research Y-MP8I/8128	UK Atlas Supercomputing Center UK / .	Research	8	2144 2667	. .
120	Cray Research Y-MP8/864	United Kingdom Meteorological Office UK /1991	Research Weather	8	2144 2667	. .

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121	Cray Research Y-MP8/864	United Kingdom Meteorological Office UK /1991	Research Weather	8	2144 2667	. .
122	Cray Research Y-MP8/864	University of Texas Austin USA /1990	Academic	8	2144 2667	. .
123	Fujitsu VPX240/20	Fujitsu Houston USA / .	Vendor	1	2110 2500	. .
124	Fujitsu VPX240/10	High Performance Computing Center Alberta Canada / .	Research	1	2110 2500	. .
125	Siemens-Nixdorf S400/10	IFP (Institute Francais du Petrole) Rueil France /1991	Academic Geophysics	1	2110 2500	. .
126	Fujitsu VPX240/10	University of Manchester Manchester UK /1993	Academic	1	2110 2500	. .
127	Thinking Machines CM-5/32	AMOCO Tulsa USA / .	Industry Geophysics	32	1900 4000	9216 4096
128	Thinking Machines CM-5/32	Australian National University Canberra Australia / .	Academic	32	1900 4000	9216 4096
129	Thinking Machines CM-5/32	Booz-Allen Hamilton Washington DC USA / .	Industry Consulting	32	1900 4000	9216 4096
130	Thinking Machines CM-5/32	Columbia University New York City USA / .	Academic	32	1900 4000	9216 4096
131	Thinking Machines CM-5/32	Compagnie Generale de Geophysique (CGG) France /1993	Industry Geophysics	32	1900 4000	9216 4096
132	Thinking Machines CM-5/32	Duke University Durham USA / .	Academic	32	1900 4000	9216 4096
133	Thinking Machines CM-5/32	Etablissement Technique Central de l'Armement ETCA France /1993	Academic	32	1900 4000	9216 4096
134	Thinking Machines CM-5/32	Experimental Hyperparallelism Site France / .	Research	32	1900 4000	9216 4096
135	Thinking Machines CM-5/32	JPL Pasadena USA / .	Research	32	1900 4000	9216 4096
136	Thinking Machines CM-5/32	National Center for Atmospheric Research Boulder USA / .	Research Weather	32	1900 4000	9216 4096
137	Thinking Machines CM-5/32	Oregon State University USA / .	Academic	32	1900 4000	9216 4096
138	Thinking Machines CM-5/32	SEH/ETCA France / .		32	1900 4000	9216 4096
139	Thinking Machines CM-5/32	Stanford University USA / .	Academic	32	1900 4000	9216 4096
140	Thinking Machines CM-5/32	Syracuse University Syracuse USA / .	Academic	32	1900 4000	9216 4096

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141	Thinking Machines CM-5/32	Tokyo University, Medical Lab Tokyo Japan /1993	Academic	32	1900 4000	9216 4096
142	Thinking Machines CM-5/32	Universitaet Wuppertal Wuppertal Germany /1992	Academic	32	1900 4000	9216 4096
143	Thinking Machines CM-5/32	University of Adelaide Adelaide Australia / .	Academic	32	1900 4000	9216 4096
144	Thinking Machines CM-5/32	University of California at Berkeley USA / .	Academic	32	1900 4000	9216 4096
145	Thinking Machines CM-5/32	University of Maryland USA / .	Academic	32	1900 4000	9216 4096
146	Thinking Machines CM-5/32	University of New South Wales Kensington Australia / .	Academic	32	1900 4000	9216 4096
147	Thinking Machines CM-5/32	University of Tennessee Knoxville USA / .	Academic	32	1900 4000	9216 4096
148	Intel XP/S5	Boeing Seattle USA /1992	Industry Aerospace	66	1900 3300	8000 .
149	Intel XP/S5	Intel SSD Development Centers USA /1993	Vendor	66	1900 3300	8000 .
150	Intel XP/S5	KFA Juelich Germany /1992	Research	66	1900 3300	8000 .
151	Intel XP/S5-32	NASA/Langley Research Center Hampton USA /1992	Research	66	1900 3300	8000 .
152	Intel XP/S5	Oak Ridge National Laboratory Oak Ridge USA / .	Research	66	1900 3300	8000 .
153	Intel XP/S5	Prudential Bache Securities New York USA /1993	Industry	66	1900 3300	8000 .
154	Intel XP/S5	Real World Computing (RWC) Tokyo Japan /1993		66	1900 3300	8000 .
155	Intel XP/S5-32	Universitaet Stuttgart Stuttgart Germany /1992	Academic	66	1900 3300	8000 .
156	nCube nCUBE2	Sandia National Labs Albuquerque USA / .	Research	1024	1900 2400	21376 3193
157	KSR KSR1-64	Caltech Pasadena USA /1992	Academic	64	1838 2560	9216 1536
158	KSR KSR1-64	Government UK /1992	Classified	64	1838 2560	9216 1536
159	KSR KSR1-64	Oak Ridge National Laboratory Oak Ridge USA /1991	Research	64	1838 2560	9216 1536
160	KSR KSR1-64	University of Colorado USA /1992	Academic	64	1838 2560	9216 1536

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N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
161	KSR KSR1-64	University of Massachusetts Amherst USA /1993	Academic	64	1838 2560	9216 1536
162	Cray Research Y-MP M98	Cray Research Eagan USA / .	Vendor	8	1733 2667	. .
163	Fujitsu VP2400/10	CESGA Spain /1992	Academic	1	1688 2000	. .
164	Fujitsu VP2400/20	Computer Technology Integrated (CTI) Japan /1991	Industry	1	1688 2000	. .
165	Hitachi S-820/80	Hokkaido University Sapporo Japan /1989	Academic	1	1672 3000	. .
166	Hitachi S-820/80	Institute of Molecular Science Japan /1988	Research	1	1672 3000	. .
167	Hitachi S-820/80	Nat. Lab. for High Energy Physics Japan /1988	Research	1	1672 3000	. .
168	Hitachi S-820/80	Nihon University Japan /1993	Academic	1	1672 3000	. .
169	Hitachi S-820/80	Senshu University Japan / .	Academic	1	1672 3000	. .
170	Cray Research Y-MP8/664	Cray Research Eagan USA / .	Vendor	6	1651 2000	. .
171	Cray Research Y-MP8/6128	DOE/CEWES USA /1990	Research Weather	6	1651 2000	. .
172	Cray Research Y-MP81/6128	NASA/Marshall Space Flight Center USA /1993	Research Aerospace	6	1651 2000	. .
173	Cray Research Y-MP8/664	Nissan Motor Kanagawa Japan /1990	Academic	6	1651 2000	. .
174	Cray Research Y-MP81/632	Tawain Central Weather Bureau Taiwan /1992	Research Weather	6	1651 2000	. .
175	Cray Research Y-MP8/632	Toyota Motor Company Japan /1991	Industry Automotive	6	1651 2000	. .
176	MasPar MP-2216	Lockheed Missiles and Space Company USA /1993	Industry Aerospace	16384	1600 2400	11264 1920
177	MasPar MP-2216	National Cancer Institute USA /1993	Research Chemistry	16384	1600 2400	11264 1920
178	dec DECmpp SX 200	University of Bergen Bergen Norway / .	Academic	16384	1600 2400	11264 1920
179	KSR KSR1-56	University of Washington Seattle USA /1992	Academic	56	1590 2240	. .
180	Intel XP/A4	Caltech Pasadena USA /1993	Academic	56	1500 4200	6000 .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
181	Intel XP/A4	Hiroshima University Japan /1993	Academic	56	1500 4200	6000 .
182	Intel XP/A4E	IRISA Rennes France /1993	Research Aerospace	56	1500 4200	6000 .
183	Intel XP/A4	Rice University USA /1993	Academic	56	1500 4200	6000 .
184	Intel XP/A4	Sandia National Labs Livermore USA /1993	Research Energy	56	1500 4200	6000 .
185	Intel XP/A4E	Technische Universitaet Graz Graz Austria /1993	Academic	56	1500 4200	6000 .
186	Intel XP/A4	University of Indiana USA /1993	Academic	56	1500 4200	6000 .
187	Intel XP/A4	University of Melbourne Australia /1993	Academic	56	1500 4200	6000 .
188	Intel XP/A4	University of South Carolina USA /1992	Academic	56	1500 4200	6000 .
189	Intel XP/A4	University of Trondheim Norway /1992	Academic	56	1500 4200	6000 .
190	Cray Research CRAY-2s/4-128	DKRZ Germany /1988	Research Weather	4	1406 1952	. .
191	Cray Research CRAY-2s/4-128	KIST/System Engineering Research Institute Korea /1988	Academic	4	1406 1952	. .
192	Cray Research CRAY-2s/4-128	Lawrence Livermore National Laboratory NERSC USA /1988	Research Energy	4	1406 1952	. .
193	Cray Research CRAY-2s/4-128	NASA/Langley Research Center Hampton USA /1989	Research	4	1406 1952	. .
194	Cray Research CRAY-2s/4-128	NCSA Urbana-Champaign USA /1988	Academic	4	1406 1952	. .
195	Cray Research CRAY-2/4-256	Air Force/Phillips Lab USA /1987	Research Aerospace	4	1406 1951	. .
196	Cray Research CRAY-2/4-512	Arabian American Oil Company USA /1992	Industry Geophysics	4	1406 1951	. .
197	Cray Research CRAY-2/4-256	Commissariat a l'Energie Atomique Grenoble France /1989	Research Energy	4	1406 1951	. .
198	Cray Research CRAY-2/4-128	Cray Research Eagan USA / .	Vendor	4	1406 1951	. .
199	Cray Research CRAY-2/4-256	Defense Research Agency Farnborough UK /1990	Classified	4	1406 1951	. .
200	Cray Research CRAY-2/4-256	Direction de la Meteorologie Nationale France /1989	Research Weather	4	1406 1951	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
201	Cray Research CRAY-2/4-256	Ecole Polytechnique Federale de Lausanne Lausanne Switzerland/1990	Academic	4	1406 1951	. .
202	Cray Research CRAY-2/4-512	Minnesota Supercomputer Center USA /1988	Academic	4	1406 1951	. .
203	Cray Research CRAY-2/4-256	NASA/Ames Research Center/NAS Moffett Field USA /1991	Classified	4	1406 1951	. .
204	Cray Research CRAY-2/4-256	NT T Japan /1987	Industry Electronics	4	1406 1951	. .
205	Cray Research CRAY-2/4-512	US Air Force/National Test Facility USA /1990	Classified	4	1406 1951	. .
206	Cray Research CRAY-2/4-256	Universitaet Stuttgart Stuttgart Germany /1986	Research	4	1406 1951	. .
207	Intel iPSC/860	Caltech Pasadena USA /1990	Academic	64	1400 2500	9000 3500
208	Intel iPSC/860	Daresbury Laboratory Warrington UK / .	Research	64	1400 2500	9000 3500
209	Intel iPSC/860	McDonnell Douglas USA /1991	Industry Aerospace	64	1400 2500	9000 3500
210	Intel iPSC/860	SERC USA /1990	Research	64	1400 2500	9000 3500
211	Intel iPSC/860	Sandia National Labs Albuquerque USA /1991	Research	64	1400 2500	9000 3500
212	Intel iPSC/860	Superconducting Supercollider Lab USA /1990	Research	64	1400 2500	9000 3500
213	Intel iPSC/860	UCSD/San Diego Supercomputer Center San Diego USA /1990	Academic	64	1400 2500	9000 3500
214	Intel iPSC/860	Westinghouse Electric USA /1992	Industry Energy	64	1400 2500	9000 3500
215	KSR KSR1-48	North Carolina Supercomputer Center USA /1992	Academic	48	1350 1920	. .
216	Thinking Machines CM-2/16k	ATR Japan /1990		512	1300 3500	. .
217	Thinking Machines CM-2/16k	Australian National University Canberra Australia / .	Academic	512	1300 3500	. .
218	Thinking Machines CM-2/16k	GMD Birlinghoven Germany /1990	Research	512	1300 3500	. .
219	Thinking Machines CM-2/16k	ICFD Japan /1991	Research	512	1300 3500	. .
220	Meiko CS/i860/64	University of Edinburgh Edinburgh UK /1990	Academic	64	1300 2500	8500 3500

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	NEC SX-3/11	Sanyo Electric Moriguchi City Japan /1991	Industry Electronics	1	1300 1370	2816 192
222	NEC SX-3/11	Tokai University Tokai Japan /1992	Academic	1	1300 1370	2816 192
223	NEC SX-3/11	Universitaet Koeln Koeln Germany /1990	Academic	1	1300 1370	2816 192
224	Cray Research Y-MP8/4128	BMW AG Germany /1992	Industry Automotive	4	1159 1333	. .
225	Cray Research Y-MP8E/4128	Boeing Seattle USA / .	Industry Aerospace	4	1159 1333	. .
226	Cray Research Y-MP8/464	CINECA Bologna Italy /1992	Academic	4	1159 1333	. .
227	Cray Research Y-MP8I/464	Chrysler Motors Company USA /1992	Industry Automotive	4	1159 1333	. .
228	Cray Research Y-MP4E/464	Citroen Peugeot Velizy France /1992	Industry Automotive	4	1159 1333	. .
229	Cray Research Y-MP4/432	Compagnie Generale de Geophysique (CGG) France /1992	Industry Geophysics	4	1159 1333	. .
230	Cray Research Y-MP4/464	Cray Research Eagan USA / .	Vendor	4	1159 1333	. .
231	Cray Research Y-MP4/464	Cray Research Eagan USA / .	Vendor	4	1159 1333	. .
232	Cray Research Y-MP8/432	Defense Research Agency Ford Halstead UK /1990	Research	4	1159 1333	. .
233	Cray Research Y-MP4/432	Deutscher Wetterdienst Offenbach Germany /1990	Research Weather	4	1159 1333	. .
234	Cray Research Y-MP8/432	EXXON USA /1992	Industry Geophysics	4	1159 1333	. .
235	Cray Research Y-MP4/464	Eidgenoessische Technische Hochschule Zuerich Switzerland/1992	Academic	4	1159 1333	. .
236	Cray Research Y-MP8/4128	Electricite de France Clamart France /1990	Industry Energy	4	1159 1333	. .
237	Cray Research Y-MP4/432	Florida State University Tallahassee USA /1990	Academic	4	1159 1333	. .
238	Cray Research Y-MP4E/464	MPI Garching Germany /1991	Research	4	1159 1333	. .
239	Cray Research Y-MP4E/464	Matsushita Electric Osaka Japan /1992	Academic	4	1159 1333	. .
240	Cray Research Y-MP8I/4128	Merck Co USA /1993	Industry Chemistry	4	1159 1333	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
241	Cray Research Y-MP4/464	Mitsubishi Motors Company Japan /1992	Industry Automotive	4	1159 1333	. .
242	Cray Research Y-MP4/464	NCSA Urbana-Champaign USA /1990	Academic	4	1159 1333	. .
243	Cray Research Y-MP8/464	North Carolina Supercomputer Center USA /1991	Academic	4	1159 1333	. .
244	Cray Research Y-MP8/4128	ONERA France /1991	Research Aerospace	4	1159 1333	. .
245	Cray Research Y-MP4/464	SARA (Stichting Academisch Rekencentrum) Amsterdam Netherlands/1990	Academic	4	1159 1333	. .
246	Cray Research Y-MP4E/464	Samsung Korea /1991	Industry Electronics	4	1159 1333	. .
247	Cray Research Y-MP8/4128	Toshiba Kanagawa Japan /1990	Academic	4	1159 1333	. .
248	Cray Research Y-MP4/432	Universidad Nacional Autonoma de Mexico Mexico /1991	Academic	4	1159 1333	. .
249	Cray Research Y-MP4/464	University of Trondheim Norway /1992	Academic	4	1159 1333	. .
250	Cray Research Y-MP M94/4256	KFA Juelich Germany /1993	Research	4	1114 1333	. .
251	Cray Research Y-MP M98/41024	University of Alaska Fairbanks USA /1992	Academic	4	1114 1333	. .
252	Fujitsu VPX220/10	GECO-PRAKLA Houston USA /1993	Industry Geophysics	1	1048 1250	. .
253	Siemens-Nixdorf S200/10	Schering Germany /1991	Industry Chemistry	1	1048 1250	. .
254	Siemens-Nixdorf S200/20	Siemens Muenchen Germany /1991	Industry Electronics	1	1048 1250	. .
255	Thinking Machines CM-5/16	Kyushu University Kyushu Japan / .	Academic	16	980 2000	6528 3008
256	Thinking Machines CM-5/16	Pittsburgh Supercomputing Center Pittsburgh USA / .	Academic	16	980 2000	6528 3008
257	Thinking Machines CM-5/16	RUG (Rijksuniversiteit Groningen) Groningen Netherlands/1993	Academic	16	980 2000	6528 3008
258	Thinking Machines CM-5/16	West Virginia University USA / .	Academic	16	980 2000	6528 3008
259	Parsytec GCel 3/1024	Universitaet Koeln/DLR Koeln Germany /1992	Academic	1024	971 1540	15999 2073
260	Parsytec GCel 3/1024	Universitaet Paderborn Paderborn Germany /1992	Academic	1024	971 1540	15999 2073

Mannheim July 1, 1993

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
261	Meiko CS/i860/42	Ensign Geophysics Weybridge UK /1987	Academic	42	970 1700	. .
262	nCube nCUBE2	Mitsubishi Electric Corporation Kanagawa Japan /1991	Industry Electronics	512	958 1200	15200 2240
263	nCube nCUBE2	Rockwell USA /1992	Industry Aerospace	512	958 1200	15200 2240
264	KSR KSR1-32	GWDG Goettingen Germany /1992	Academic	32	893 1280	6144 896
265	KSR KSR1-32	Georgia Institute of Technology USA /1992	Research	32	893 1280	6144 896
266	KSR KSR1-32	Leibniz Rechenzentrum Muenchen Germany /1993	Academic	32	893 1280	6144 896
267	KSR KSR1-32	Siemens Nixdorf Muenchen Germany /1993	Vendor	32	893 1280	6144 896
268	KSR KSR1-32	Universitaet Mannheim Mannheim Germany /1992	Academic	32	893 1280	6144 896
269	KSR KSR1-32	University of Houston USA /1992	Academic	32	893 1280	6144 896
270	KSR KSR1-32	University of Manchester Manchester UK /1992	Academic	32	893 1280	6144 896
271	KSR KSR1-32	University of Michigan Michigan USA /1992	Academic	32	893 1280	6144 896
272	NEC SX-2	Aoyama Gakuin University Japan /1988	Academic	1	885 1333	. .
273	NEC SX-2	Institute Laser Eng Osaka Univ. Osaka Japan /1985	Academic	1	885 1333	. .
274	NEC SX-2	Institute of Computational Fluid Dynamics Japan /1987	Research	1	885 1333	. .
275	NEC SX-2A	Mazda Motor Corporation Yokohama Japan /1989	Industry Automotive	1	885 1333	. .
276	NEC SX-2	NEC Fuchu Plant Japan /1987	Vendor	1	885 1333	. .
277	NEC SX-2	NEC Scientific Information (NSIS) Japan /1985	Research	1	885 1333	. .
278	NEC SX-2	Sumitomo Metal Industries Japan /1988	Industry	1	885 1333	. .
279	NEC SX-2	Tohoku University Tohoku Japan /1988	Academic	1	885 1333	. .
280	Cray Research Y-MP4/332	Arco Oil and Gas Company USA /1992	Industry Geophysics	3	881 999	. .

Mannheim July 1, 1993

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
281	Cray Research Y-MP4E/364	British Aerospace PLC UK /1991	Industry Aerospace	3	881 999	. .
282	Cray Research Y-MP4E/364	DKRZ Germany /1991	Research Weather	3	881 999	. .
283	Cray Research Y-MP4/332	Du Pont De Nemours Company USA /1990	Industry Chemistry	3	881 999	. .
284	Cray Research Y-MP8/364	Honda Research and Development Company Tokyo Japan /1990	Industry Automotive	3	881 999	. .
285	Cray Research Y-MP4/364	Mitsubishi Electric Corporation Kanagawa Japan /1991	Industry Electronics	3	881 999	. .
286	Cray Research Y-MP4E/364	Mobil / Technical Center Tulsa USA /1993	Industry Geophysics	3	881 999	. .
287	Cray Research Y-MP4E/364	Renault France /1992	Industry Automotive	3	881 999	. .
288	Cray Research Y-MP4/332	Shell USA USA /1992	Industry Geophysics	3	881 999	. .
289	Cray Research Y-MP8/364	VW (Volkswagen AG) Wolfsburg Germany /1991	Industry Automotive	3	881 999	. .
290	Cray Research Y-MP4/364	debis Stuttgart Germany /1991	Industry Automotive	3	881 999	. .
291	Cray Research Y-MP M98/31024	General Motors/Research Environment Staff USA /1993	Industry Automotive	3	855 999	. .
292	Fujitsu VP2200/10	ANSTO Australia /1991	Academic	1	842 1000	. .
293	Fujitsu VP2200/10	Australian National University Canberra Australia /1991	Academic	1	842 1000	. .
294	Fujitsu VP2200/10	Kawasaki Heavy Industry Japan /1990	Industry Heavy Ind.	1	842 1000	. .
295	Fujitsu VP2200/10	Kawasaki Steel Japan /1991	Industry Heavy Ind.	1	842 1000	. .
296	Fujitsu VP2200/10	Meiji University Japan /1990	Academic	1	842 1000	. .
297	Fujitsu VP2200/10	Nikko Securities Japan /1991	Industry finance	1	842 1000	. .
298	Fujitsu VP2200/10	Nippon Steel Japan /1992	Industry Heavy Ind.	1	842 1000	. .
299	Fujitsu VP2200/10	SONY Japan /1991	Industry	1	842 1000	. .
300	Fujitsu VP2200/10	Sharp Japan /1990	Industry Electronics	1	842 1000	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
301	Fujitsu VP2200/20	Toyota Motor Company Japan /1991	Industry Automotive	1	842 1000	. .
302	Siemens-Nixdorf S200/10 (4ns)	Universitaet Frankfurt Frankfurt Germany /1991	Academic	1	842 1000	. .
303	Meiko CS/i860/32	DRA Malvern Weybridge UK /1990	Research	32	825 1300	7000 3000
304	Cray Research X-MP/416	AMK Bonn Germany /1990	Classified	4	822 940	. .
305	Cray Research X-MPea/432	BP Exploration Inc./U.S. USA /1990	Industry Geophysics	4	822 940	. .
306	Cray Research X-MP/48	Battelle Software Seattle USA / .	Industry Energy	4	822 940	. .
307	Cray Research X-MPea/432	CSC (Centre for Scientific computing) Espoo Finland /1990	Academic	4	822 940	. .
308	Cray Research X-MP/4	Chevron La Habra USA / .	Industry Geophysics	4	822 940	. .
309	Cray Research X-MP/416	Compagnie Generale de Geophysique (CGG) France /1992	Industry Geophysics	4	822 940	. .
310	Cray Research X-MP/416	Cray Research Eagan USA / .	Vendor	4	822 940	. .
311	Cray Research X-MP/416	Lawrence Livermore National Laboratory Livermore USA /1987	Research	4	822 940	. .
312	Cray Research X-MPea/464	Lockheed Missiles and Space Company USA /1990	Industry Aerospace	4	822 940	. .
313	Cray Research X-MPea/464	Lockheed Missiles and Space Company USA /1990	Industry Aerospace	4	822 940	. .
314	Cray Research X-MP/4	MIT Cambridge USA / .	Research	4	822 940	. .
315	Cray Research X-MP/416	Michelin France /1992	Industry Automotive	4	822 940	. .
316	Cray Research X-MPea/464	Minnesota Supercomputer Center USA /1991	Academic	4	822 940	. .
317	Cray Research X-MPea/464	Minnesota Supercomputer Center USA /1992	Academic	4	822 940	. .
318	Cray Research X-MP/416	NASA/Marshall Space Flight Center USA /1988	Research Aerospace	4	822 940	. .
319	Cray Research X-MP/416	Swedish National Supercomputer Centre Sweden /1991	Academic	4	822 940	. .
320	Convex C3880	CONVEX Dallas USA /1992	Vendor	8	795 960	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
321	Convex C3880	DKRZ Germany /1993	Research Weather	8	795 960	. .
322	Convex C3880	DMI Copenhagen Denmark /1992		8	795 960	. .
323	Convex C3880	Ford Dearborn USA /1992	Industry Automotive	8	795 960	. .
324	Convex C3880	NCSA Urbana-Champaign USA /1992	Academic	8	795 960	. .
325	Convex C3880	SICAN Hannover Germany /1993	Industry	8	795 960	. .
326	Convex C3880	UNOCAL USA /1992	Industry	8	795 960	. .
327	Siemens-Nixdorf VP400EX	KFK Karlsruhe Germany /1990	Research	1	794 1714	. .
328	Fujitsu VP-400E	NAL Japan /1987		1	794 1714	. .
329	NEC SX-3/1LR	Sumitomo Rubber Industries Japan /1992	Industry Chemistry	1	780 800	2304 112
330	MasPar MP-2208	Arizona State University USA /1993	Academic	8192	766 1200	9386 1374
331	Cray Research S-MP/MCP784	Canon USA / .	Industry	84	742 3360	. .
332	Cray Research S-MP/MCP784	Martin Marietta USA / .	Industry Defense	84	742 3360	. .
333	Cray Research S-MP/MCP784	Martin Marietta USA / .	Industry Defense	84	742 3360	. .
334	Cray Research S-MP/MCP784	Martin Marietta USA / .	Industry Defense	84	742 3360	. .
335	Cray Research S-MP/MCP784	Martin Marietta USA / .	Industry Defense	84	742 3360	. .
336	Cray Research S-MP/MCP784	Martin Marietta USA / .	Industry Defense	84	742 3360	. .
337	Cray Research S-MP/MCP784	Martin Marietta USA / .	Industry Defense	84	742 3360	. .
338	Cray Research CRAY-2s/2-128	Eli Lilly and Company USA /1990	Industry Chemistry	2	741 976	. .
339	Cray Research CRAY-2s/2-128	US Air Force/National Test Facility USA /1988	Classified	2	741 976	. .
340	Cray Research S-MP/MCP756	CNR-Napoli USA / .		56	678 2210	. .

Mannheim July 1, 1993

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
341	Cray Research S-MP/MCP256	Cray Research Eagan USA / .	Vendor	56	678 2210	. .
342	Cray Research S-MP/MCP756	Special Systems USA / .		56	678 2210	. .
343	Cray Research S-MP/MCP756	Special Systems USA / .		56	678 2210	. .
344	NEC SX-3/1L	Hino Motor Japan /1992	Industry Automotive	1	670 680	2048 128
345	NEC SX-3/1L	Kajima Construction Japan /1991	Industry	1	670 680	2048 128
346	NEC SX-3/1L	Komatsu MFG Japan /1991	Industry	1	670 680	2048 128
347	Thinking Machines CM-2/8k	Universitaet Wuppertal Wuppertal Germany /1990	Academic	256	650 1750	. .
348	Thinking Machines CM-2/8k	University of Parma Parma Italy / .	Academic	256	650 1750	. .
349	Intel iPSC/860	Fermi National Accelerator Laboratory Batavia USA / .	Research	32	640 1280	6000 2500
350	Intel iPSC/860	GSF Neuherberg Germany /1990	Research	32	640 1280	6000 2500
351	Intel iPSC/860	KFA Juelich Germany /1991	Research	32	640 1280	6000 2500
352	Intel iPSC/860	Universitaet Saarbruecken Saarbruecken Germany /1990	Academic	32	640 1280	6000 2500
353	Convex M3860/8	CIRA Italy /1993		6	615 720	. .
354	Convex C3860	GRS (Gesellschaft fuer Reaktorsicherheit) Muenchen Germany /1993	Research	6	615 720	. .
355	Convex C3860	Josef Stefan Institut Ljubljana Slovenia /1993	Research	6	615 720	. .
356	Convex C3860	MIT Cambridge USA /1993	Research	6	615 720	. .
357	Cray Research Y-MP4E/264	AGIP Italy /1993	Industry Geophysics	2	604 666	. .
358	Cray Research Y-MP2E/232	Agency for Defense Development Korea /1992	Classified	2	604 666	. .
359	Cray Research Y-MP8/2128	Air Force/Eglin Air Force Base USA /1990	Classified	2	604 666	. .
360	Cray Research Y-MP2E/232	Apple Computer Inc. USA /1991	Industry Electronics	2	604 666	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
361	Cray Research Y-MP2E/232	Audi AG Ingolstadt Germany /1992	Industry Automotive	2	604 666	. .
362	Cray Research Y-MP2E/232	Bundesanstalt fuer Wasserbau Germany /1992	Research Geophysics	2	604 666	. .
363	Cray Research Y-MP2E/232	Bureau of Meterology Melbourne Australia /1992	Research Weather	2	604 666	. .
364	Cray Research Y-MP2E/232	CONOCO Inc. USA /1991	Industry Geophysics	2	604 666	. .
365	Cray Research Y-MP4E/264	CSIRO (Commonwealth Scientific) Carlton Australia / .	Research	2	604 666	. .
366	Cray Research Y-MP4E/232	Canon Sales Tokyo Japan /1992	Industry	2	604 666	. .
367	Cray Research Y-MP2E/232	Centro de Supercomputacion de Catalunya Barcelona Spain /1992	Academic	2	604 666	. .
368	Cray Research Y-MP4E/232	Compagnie Generale de Geophysique (CGG) UK /1992	Industry Geophysics	2	604 666	. .
369	Cray Research Y-MP2/232	Cray Research Eagan USA / .	Vendor	2	604 666	. .
370	Cray Research Y-MP8/21024	Cray Research Eagan USA / .	Vendor	2	604 666	. .
371	Cray Research Y-MP2/232	DLR Oberpfaffenhofen Germany /1990	Research	2	604 666	. .
372	Cray Research Y-MP2E/232	Daihatsu Motor Company Japan /1992	Industry Automotive	2	604 666	. .
373	Cray Research Y-MP2E/264	Disaster Prevention Research Japan /1992	Research	2	604 666	. .
374	Cray Research Y-MP2E/232	EDS/ Adam Opel AG Ruesselsheim Germany /1992	Industry auot	2	604 666	. .
375	Cray Research Y-MP4E/264	Ecole Polytechnique Federale de Lausanne Lausanne Switzerland/1992	Academic	2	604 666	. .
376	Cray Research Y-MP4/264	Electricite de France Clamart France /1992	Industry Energy	2	604 666	. .
377	Cray Research Y-MP4/216	Fiat Italy /1991	Industry Automotive	2	604 666	. .
378	Cray Research Y-MP2E/232	Grumman Aerospace Corporation USA /1991	Industry Aerospace	2	604 666	. .
379	Cray Research Y-MP4/264	Harwell Laboratory UK /1993	Research Energy	2	604 666	. .
380	Cray Research Y-MP2E/232	Institute Mediterranen de Technologie Marseille France /1991	Academic	2	604 666	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
381	Cray Research Y-MP2E/232	Isuzu Motor Tokyo Japan /1991	Industry Automotive	2	604 666	. .
382	Cray Research Y-MP2E/264	Kyoto University, Chemical Research Kyoto Japan /1992	Academic	2	604 666	. .
383	Cray Research Y-MP2/216	Lockheed Aeronautical Systems Company USA /1992	Industry Aerospace	2	604 666	. .
384	Cray Research Y-MPS/264	Los Alamos National Laboratory Los Alamos USA /1990	Research Energy	2	604 666	. .
385	Cray Research Y-MP2E/264	Marion Merrell Dow Inc USA /1992	Industry Chemistry	2	604 666	. .
386	Cray Research Y-MP2E/232	Mazda Motor Corporation Yokohama Japan /1991	Industry Automotive	2	604 666	. .
387	Cray Research Y-MP2E/216	Mazda Motor Corporation Yokohama Japan /1992	Industry Automotive	2	604 666	. .
388	Cray Research Y-MP2/216	NBS USA /1991	Research Weather	2	604 666	. .
389	Cray Research Y-MP2	National Center for Atmospheric Research Boulder USA / .	Research Weather	2	604 666	. .
390	Cray Research Y-MP2E/216	Navy POPS Supercomputing Facility Saint Louis USA / .	Research Weather	2	604 666	. .
391	Cray Research Y-MPS/232	Nippon Denso Japan /1991		2	604 666	. .
392	Cray Research Y-MP2E/232	Pennsylvania State University USA /1993	Academic	2	604 666	. .
393	Cray Research Y-MP2/232	Phillips Petroleum Company USA /1992	Industry Geophysics	2	604 666	. .
394	Cray Research Y-MP4/216	Rolls-Royce PLC UK /1990	Industry Aerospace	2	604 666	. .
395	Cray Research Y-MP2/264	Sandia National Labs Livermore USA / .	Research Energy	2	604 666	. .
396	Cray Research Y-MP2E/264	TEXACO USA /1991	Industry Geophysics	2	604 666	. .
397	Cray Research Y-MP2/216	Texas A M University USA /1993	Academic	2	604 666	. .
398	Cray Research Y-MP2E/264	The Scripps Research Institute USA /1992	Industry Chemistry	2	604 666	. .
399	Cray Research Y-MP2E/232	UFRGS/Uni. Federal do Rio Grande do Sul Brazil /1992	Academic	2	604 666	. .
400	Cray Research Y-MP2E/232	US Navy/Fleet Numerical Oceanography Center Monterey USA /1992	Research Weather	2	604 666	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
401	Cray Research Y-MP2/216	University of Nevada at Las Vegas USA /1990	Academic	2	604 666	. .
402	Cray Research Y-MP2/232	University of Rochester - Laboratory for Laser E. USA /1991	Academic	2	604 666	. .
403	Siemens-Nixdorf S100/10	GEOVOR Traben Trabach Germany /1991	Industry Weather	1	556 625	. .
404	Siemens-Nixdorf S100/10	Technische Universitaet Wien Wien Austria /1992	Academic	1	556 625	. .
405	Siemens-Nixdorf S100/10	Universitaet Hamburg Germany /1992	Academic	1	556 625	. .
406	Cray Research Y-MP M92/2256	AT T Bell Laboratories USA /1992	Industry Electronics	2	550 666	. .
407	Cray Research Y-MP M92/21024	Minnesota Supercomputer Center USA /1992	Academic	2	550 666	. .
408	Convex C3850	NASA/Johnson Space Center Houston USA /1992	Research	5	522 600	. .
409	Convex C3850	Universitaet Tuebingen Tuebingen Germany /1992	Academic	5	522 600	. .
410	Cray Research S-MP/MCP728	CWI/Centrum voor Wiskunde en Informatica Amsterdam Netherlands/1992	Research	28	508 1120	. .
411	Parsytec GCel 3/512	SARA (Stichting Academisch Rekencentrum) Amsterdam Netherlands/1993	Academic	512	485 770	. .
412	MasPar MP-1216	AT T USA /1991	Industry Electronics	16384	473 550	11264 1280
413	MasPar MP-1216	Bellcore USA /1990	Industry	16384	473 550	11264 1280
414	MasPar MP-1216	Chevron La Habra USA / .	Industry Geophysics	16384	473 550	11264 1280
415	MasPar MP-1216	Harvard University Cambridge USA / .	Academic	16384	473 550	11264 1280
416	MasPar MP-1216	Iowa State University USA /1990	Academic	16384	473 550	11264 1280
417	MasPar MP-1216	NASA/Goddard Space Flight Center Greenbelt USA /1990	Research Aerospace	16384	473 550	11264 1280
418	MasPar MP-1216	Purdue University West Lafayette USA /1991	Academic	16384	473 550	11264 1280
419	dec DECmpp SX 100	Thompson LER Rennes France / .	Industry Electronics	16384	473 550	11264 1280
420	MasPar MP-1216	Universitaet Karlsruhe Karlsruhe Germany /1990	Academic	16384	473 550	11264 1280

Mannheim July 1, 1993

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	Rmax R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
421	MasPar MP-1216	Universitaet Stuttgart Stuttgart Germany /1991	Academic	16384	473 550	11264 1280
422	Fujitsu VP-200E	MOE Nobeyama Observatory Japan /1989	Research	1	472 857	. .
423	Fujitsu VP-200E	MOE Space Science Research Japan /1987	Research	1	472 857	. .
424	Fujitsu VP-200E	Nat. Space Observatory Japan /1986	Research	1	472 857	. .
425	Fujitsu VP-200E	National Fusion Research Japan /1988	Research	1	472 857	. .
426	Siemens-Nixdorf VP200EX	Universitaet Bremen Germany /1991	Academic	1	472 857	. .
427	Siemens-Nixdorf VP200EX	Universitaet Dresden Dresden Germany /1991	Academic	1	472 857	. .
428	Meiko CS/i860/16	DRA Malvern Weybridge UK /1990	Research	16	445 640	5000 2000
429	Meiko CS/i860/16	Hewlett Packard Corvallis USA /1988	Industry Electronics	16	445 640	5000 2000
430	Meiko CS/i860/16	INRIA - Sophia Antipolis France /1991	Research	16	445 640	5000 2000
431	Meiko CS/i860/16	Uni-C Copenhagen Denmark /1992	Academic	16	445 640	5000 2000
432	Meiko CS/i860/16	University of Edinburgh Edinburgh UK / .	Research	16	445 640	5000 2000
433	Meiko CS/i860/16	University of Hong Kong Hong Kong Hong Kong /1993	Academic	16	445 640	5000 2000
434	Fujitsu VP2100/10	Fukuoka University Japan /1991	Academic	1	445 500	. .
435	Fujitsu VP2100/20	GECO-PRAKLA UK /1991	Industry Geophysics	1	445 500	. .
436	Fujitsu VP2100/10	Goyo Kensetu Japan /1991	Industry Construction	1	445 500	. .
437	Fujitsu VP2100/10	Ishikawajima Harima Japan /1991	Industry Heavy Ind.	1	445 500	. .
438	Fujitsu VP2100/20	Kobe Steel Japan /1992	Industry Heavy Ind.	1	445 500	. .
439	Fujitsu VP2100/10	Kozo Keikaku Research Japan /1992	Research	1	445 500	. .
440	Fujitsu VP2100/10	Mitsui Toatsu Chemical Japan /1991	Industry Chemistry	1	445 500	. .

Mannheim July 1, 1993

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
441	Fujitsu VP2100/10	Nippon Kokan Japan /1991		1	445 500	. .
442	Fujitsu VP2100/10	Takenaka Komuten Japan /1992		1	445 500	. .
443	Fujitsu VP2100/10	Toyoda Oriki Japan /1991		1	445 500	. .
444	Fujitsu VP2100/10	Toyota Machinery Japan /1991	Industry Heavy Ind.	1	445 500	. .
445	Fujitsu VP2100/10	Toyota Motor Company Japan /1991	Industry Automotive	1	445 500	. .
446	Siemens-Nixdorf S100/10 (4ns)	Universitaet Giessen Giessen Germany /1992	Academic	1	445 500	. .
447	Siemens-Nixdorf S100/10 (4ns)	Universitaet Kassel Kassel Germany /1992	Academic	1	445 500	. .
448	Fujitsu VP2100/10	Waseda University Japan /1990	Academic	1	445 500	. .
449	Fujitsu VP2100/10	Yokohama Rubber Japan /1991	Industry Chemistry	1	445 500	. .
450	KSR KSR1-16	AWI (Alfred Wegener Institut) Bremerhaven Germany /1993	Research	16	440 640	. .
451	KSR KSR1-16	Arithmotechniki Greece /1992	Research	16	440 640	. .
452	KSR KSR1-16	INRIA - Sophia Antipolis Rennes France /1992	Research	16	440 640	. .
453	MasPar MP-1	NASA/Ames Research Center/CCF Moffett Field USA /1993	Research Aerospace	16384	440 550	5504 1180
454	MasPar MP-1	Nippon DEC Japan /1991	Industry Electronics	16384	440 550	5504 1180
455	MasPar MP-1	Rikei Technical Center Japan /1990		16384	440 550	5504 1180
456	MasPar MP-1	Sumitomo Metal Industries Japan /1991	Industry	16384	440 550	5504 1180
457	MasPar MP-1	Tokyo University Tokyo Japan /1991	Academic	16384	440 550	5504 1180
458	MasPar MP-1	Toyohashi Technical and Science Univ. Japan /1990	Academic	16384	440 550	5504 1180
459	Cray Research X-MP/216	Alabama Supercomputer Center USA /1992	Academic	2	427 470	. .
460	Cray Research X-MP/216	Commissariat a l'Energie Atomique Saclay France /1992	Research Energy	2	427 470	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
461	Cray Research X-MP/216	DOE/Idaho National Engineering Laboratory USA /1989	Research Energy	2	427 470	. .
462	Cray Research X-MP/216	Hydro-Quebec Canada /1991	Industry Energy	2	427 470	. .
463	Cray Research X-MP/216	Japanese AIST Hokuriku Japan /1988		2	427 470	. .
464	Cray Research X-MP/216	MITI Japan /1988	Research	2	427 470	. .
465	Cray Research X-MP/28	NASA/Lewis Research Center USA /1990	Research	2	427 470	. .
466	Cray Research X-MP/216	Thomson RCM - Radars Contre-Mesures France /1990	Industry Aerospace	2	427 470	. .
467	Cray Research X-MP/22	Toshiba Kanagawa Japan /1985	Academic	2	427 470	. .
468	Cray Research X-MP/28	US Naval Underwater Weapons Center USA /1991	Classified	2	427 470	. .
469	Cray Research X-MP/216	Universitaet Kiel Kiel Germany /1988	Academic	2	427 470	. .
470	Cray Research X-MP/28	University of California at Berkeley USA /1991	Academic	2	427 470	. .
471	Cray Research X-MP/216	ZIB/Konrad Zuse-Zentrum fuer Informationstechnik Germany /1992	Academic	2	427 470	. .
472	Convex C3840	AEDC USA /1992		4	425 480	. .
473	Convex C3840	AEDC USA /1992		4	425 480	. .
474	Convex C3840	CSC (Centre for Sientific computing) Helsinki Finland /1992	Academic	4	425 480	. .
475	Convex C3840	DGA/Etablissement Technique d'Angers (ETAS) France / .		4	425 480	. .
476	Convex M3820/8	DIGICON Houston USA /1992		4	425 480	. .
477	Convex C3840	DOD USA /1991	Classified	4	425 480	. .
478	Convex C3840	David Taylor Research Center USA /1992	Research	4	425 480	. .
479	Convex C3840	EADTB USA /1992		4	425 480	. .
480	Convex C3840	EADTB USA /1992		4	425 480	. .

Top500 Supercomputers - Worldwide

N_{world}	Manufacturer Computer	Installation Site Location/Year	Field of Application	# Proc.	R_{max} R_{peak} [Mflop/s]	N_{max} $N_{1/2}$
481	Convex C3840	GSF Muenchen Germany /1992		4	425 480	. .
482	Convex C3840	General Electric USA /1992	Industry	4	425 480	. .
483	Convex C3840	Gulfstream USA /1993	Industry Aerospace	4	425 480	. .
484	Convex C3840	Lockheed USA /1992	Industry Aerospace	4	425 480	. .
485	Convex C3840	NCHC Taiwan /1992		4	425 480	. .
486	Convex C3840	NSYSU Taiwan /1992		4	425 480	. .
487	Convex C3840	SMHI Stockholm Sweden /1992		4	425 480	. .
488	Convex C3840	Sharp Japan /1992	Industry	4	425 480	. .
489	Convex C3840	TEL Tokyo Japan /1992		4	425 480	. .
490	Convex C3840	TUD (Technical University Delft) Delft Netherlands/1992	Academic	4	425 480	. .
491	Convex C3840	Universitaet Hamburg-Harburg Hamburg-Harburg Germany /1992	Academic	4	425 480	. .
492	Convex C3840	University of Aarhus Denmark /1992	Academic	4	425 480	. .
493	NEC SX-1	Kumagaigumi Japan /1989	Academic	1	422 630	. .
494	Siemens-Nixdorf VP-200	CIRCE France /1986	Academic	1	422 533	. .
495	Fujitsu VP-200	GECO-PRAKLA USA /1990	Industry Geophysics	1	422 533	. .
496	Fujitsu VP-200	Inst. f. Space Astronautics Japan /1986	Research	1	422 533	. .
497	Fujitsu VP-200	Kao Japan /1991		1	422 533	. .
498	Fujitsu VP-200	Kobe Seiko Japan /1989	Industry Heavy Ind.	1	422 533	. .
499	Fujitsu VP-200	National Fusion Research Japan /1984	Research	1	422 533	. .
500	Siemens-Nixdorf VP-200	debis Muenchen Germany /1985	Industry	1	422 533	. .

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 continents (Table 2) as well as the accumulated R_{max} values (Table 3) and R_{peak} values (Table 4) for those systems. A comprehensive report of more than 200 pages, based on the data of the TOP500 list will be published in July, 1993 [5]

Table 2: Number of Systems installed

TOP500 Statistics — Number of Systems installed						
Manufacturer	Australia	Europe	Japan	USA	Others	Total
Convex		14	2	16	2	34
Cray Research	2	54	20	123	6	205
DEC		2				2
Fujitsu	2	3	41	4		50
Hitachi			6			6
Intel	1	11	2	30		44
KSR		9		12		21
Meiko		7		1	1	9
MasPar		2	5	11		18
nCube			1	2		3
NEC		3	25	2	1	31
Parsytec		3				3
SNI		18				18
TMC	4	14	7	31		56
Total	9	140	109	232	10	500

Mannheim July 1, 1993

Table 3: Installed R_{\max}

TOP500 Statistics — Installed R_{\max} [Gflop/s]						
Manufacturer	Australia	Europe	Japan	USA	Others	Total
Convex		7.7	0.9	8.6	0.9	18.1
Cray Research	1.2	68.6	18.2	318.0	6.6	412.6
DEC		2.1				2.1
Fujitsu	1.7	4.2	58.7	5.7		70.3
Hitachi			14.1			14.1
Intel	1.5	16.8	3.4	72.0		93.7
KSR		7.6		23.2		30.8
Meiko		4.9		0.4	0.4	5.7
MasPar		0.9	2.2	7.7		10.8
nCube			1.0	2.9		3.9
NEC		11.3	90.9	25.0	2.9	130.1
Parsytec		2.4				2.4
SNI		25.5				25.5
TMC	7.0	32.0	16.9	292.0		347.9
Total	11.4	184.0	206.3	755.5	10.8	1168.0

Mannheim July 1, 1993

Table 4: Installed R_{peak}

TOP500 Statistics — Installed R_{peak} [Gflop/s]						
Manufacturer	Australia	Europe	Japan	USA	Others	Total
Convex		9.0	1.0	9.9	1.0	20.9
Cray Research	1.3	81.6	21.4	391.0	8.0	503.3
DEC		3.0				3.0
Fujitsu	2.0	5.0	73.8	6.8		87.6
Hitachi			47.0			47.0
Intel	4.2	35.5	7.5	144.0		191.2
KSR		10.9		43.8		54.7
Meiko		8.1		0.6	0.6	9.3
MasPar		1.1	2.8	10.4		14.3
nCube			1.2	3.6		4.8
NEC		12.4	103.0	27.5	3.2	146.1
Parsytec		3.9				3.9
SNI		33.4				33.4
TMC	15.5	70.0	37.0	638.0		760.5
Total	23.0	273.9	294.7	1275.6	12.8	1880.0

Mannheim July 1, 1993

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