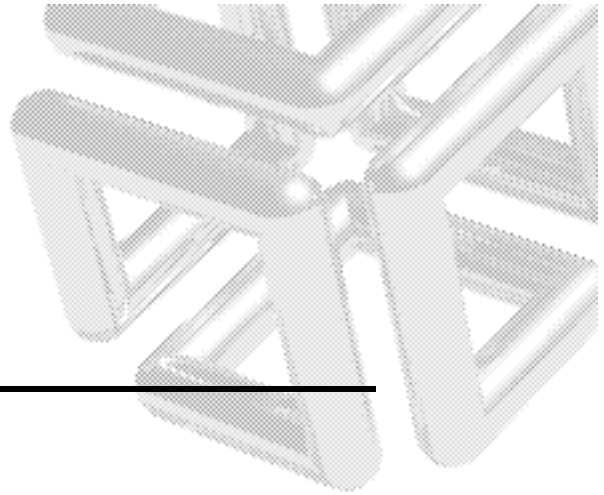

T3E and UNICOS/mk Status and Update

Jim Grindle

CATS Kernel Engineering

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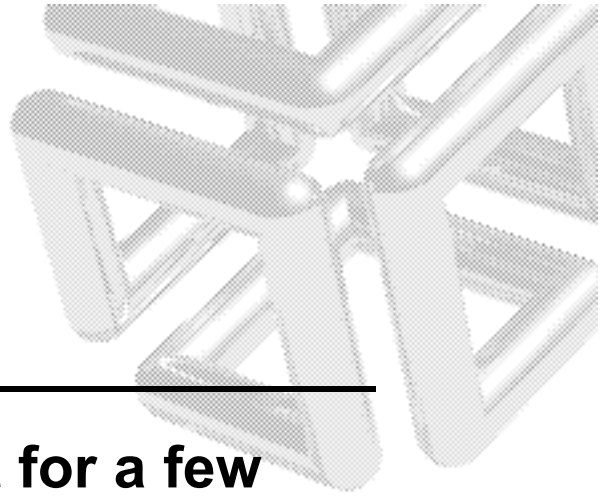
Introduction (literally)



- **Laura Mikrut (director of CATS) is out for a few weeks and I will be your contact if you have questions/comments/issues for her.**

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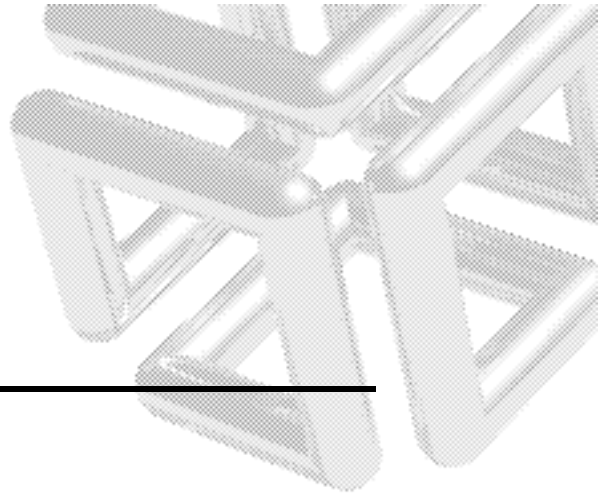
Agenda



- **T3E Hardware**
- **UNICOS/mk roadmap**
- **UNICOS/mk Software**
  - Support Plans/Releases
  - SPR Plans and Priorities
  - T3E and UNICOS/mk MTTI
  - Recent and Future UNICOS/mk Enhancements

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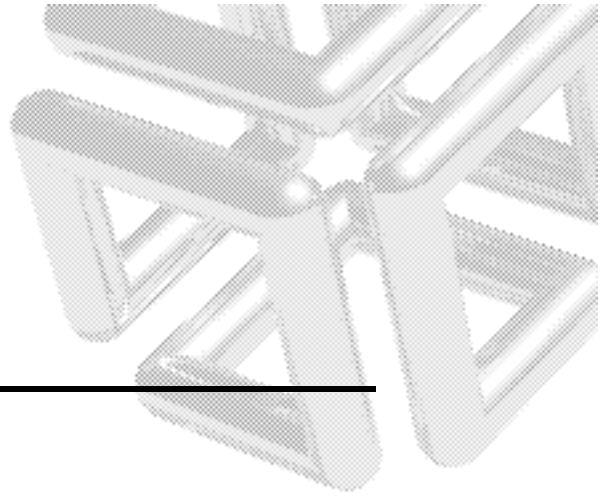
T3E Hardware



- **Recent Hardware Enhancements:**
  - T3E 1200, 600 MHz processors
  - full support for streams since T3E 900
  - T3E 1200E generally available in June
- **Future Hardware Enhancements:**
  - I/O is covered in Mike Anderson's talk going on now.

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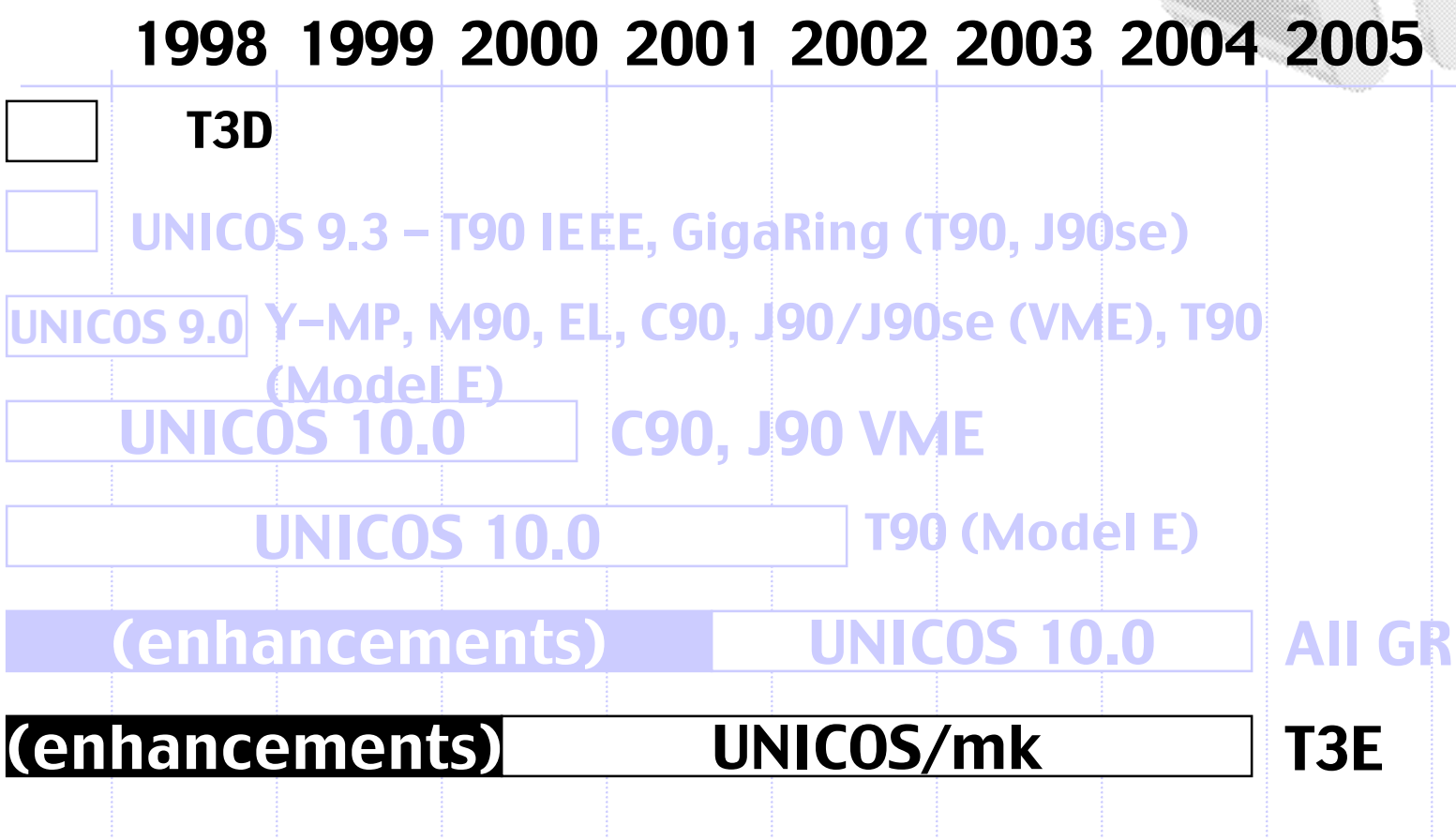
OS Support Timelines



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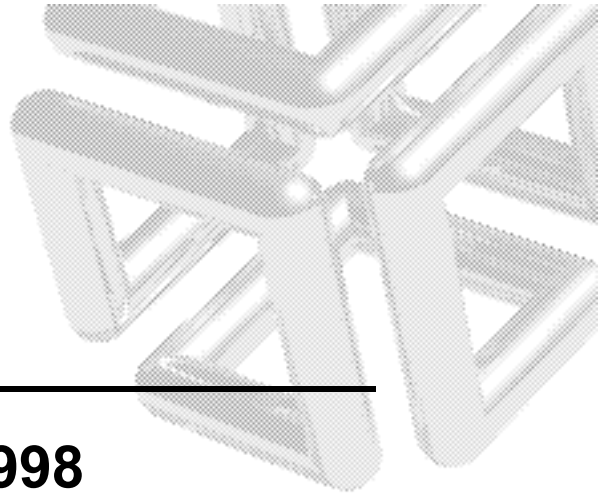
UNICOS/mk releases



- **UNICOS/mk 2.0.2 released January, 1998**
- **UNICOS/mk 2.0.3 released May, 1998**
- **UNICOS/mk 2.0.4 not before Nov/Dec 1998**
- **UNICOS/mk 2.0.5 not before May 1999**
  - (minimum 6-9 month release cycle)

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SPR Plans and Priorities

① **All Critical SPRS and Critical Site Situations**

② **Urgent SPRs**

③ **Verify severity of incoming Major, Minor, Design SPRs**

④ **Address incoming Major, Minor, Design**

⑤ **Backlog of major, minor, design SPRs**

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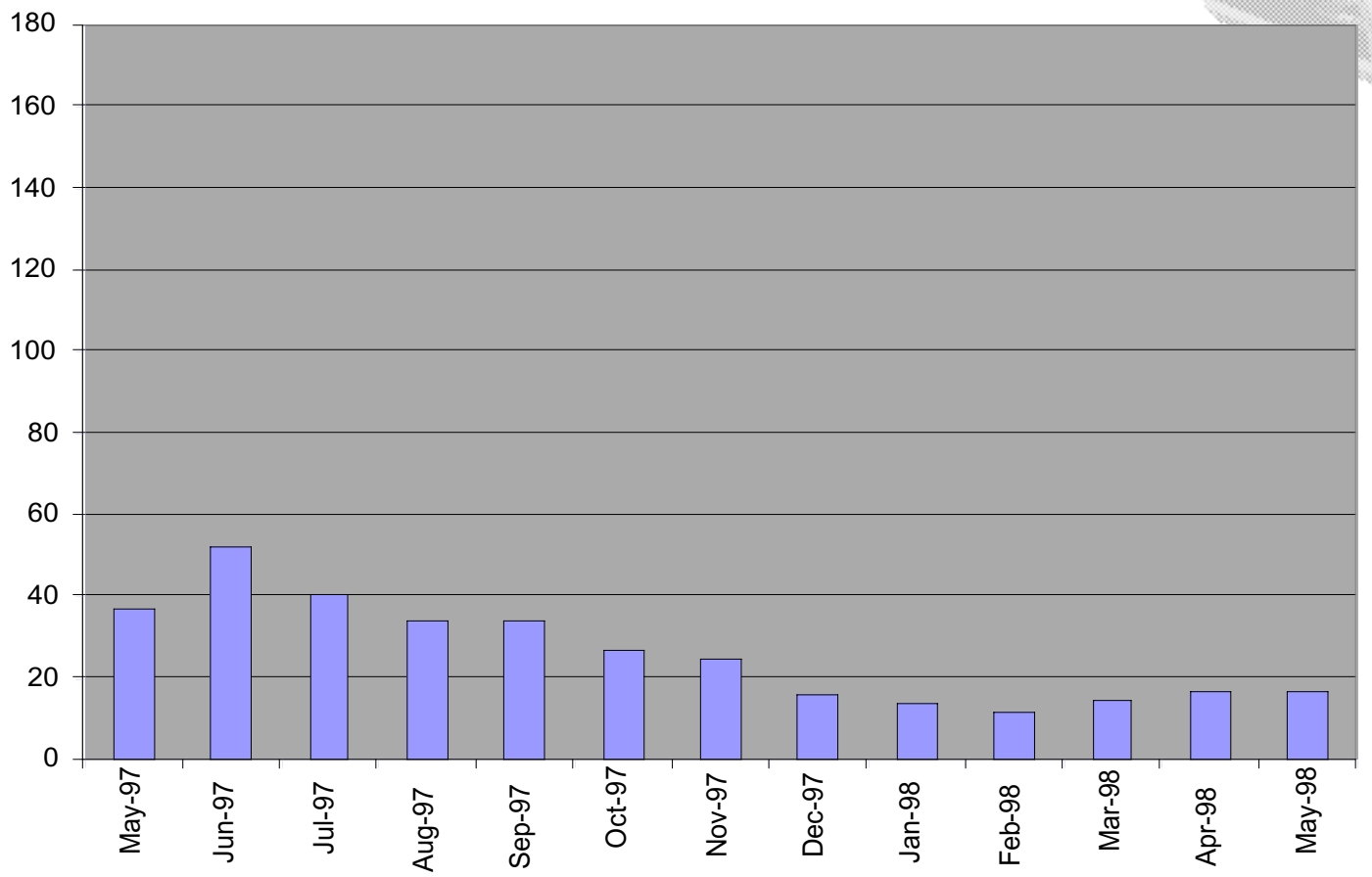
UNICOS/mk Critical SPRs



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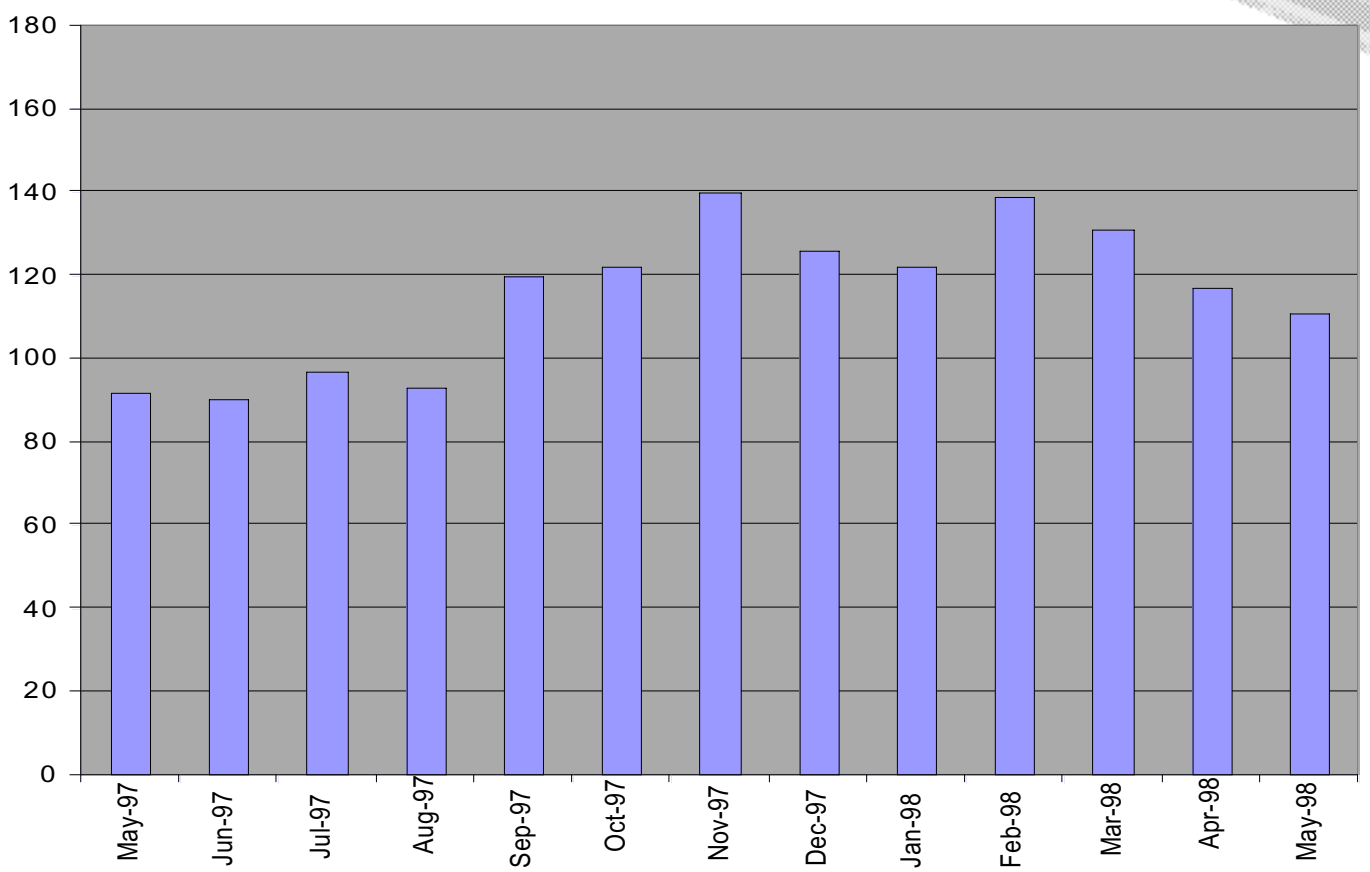
UNICOS/mk Urgent SPR's



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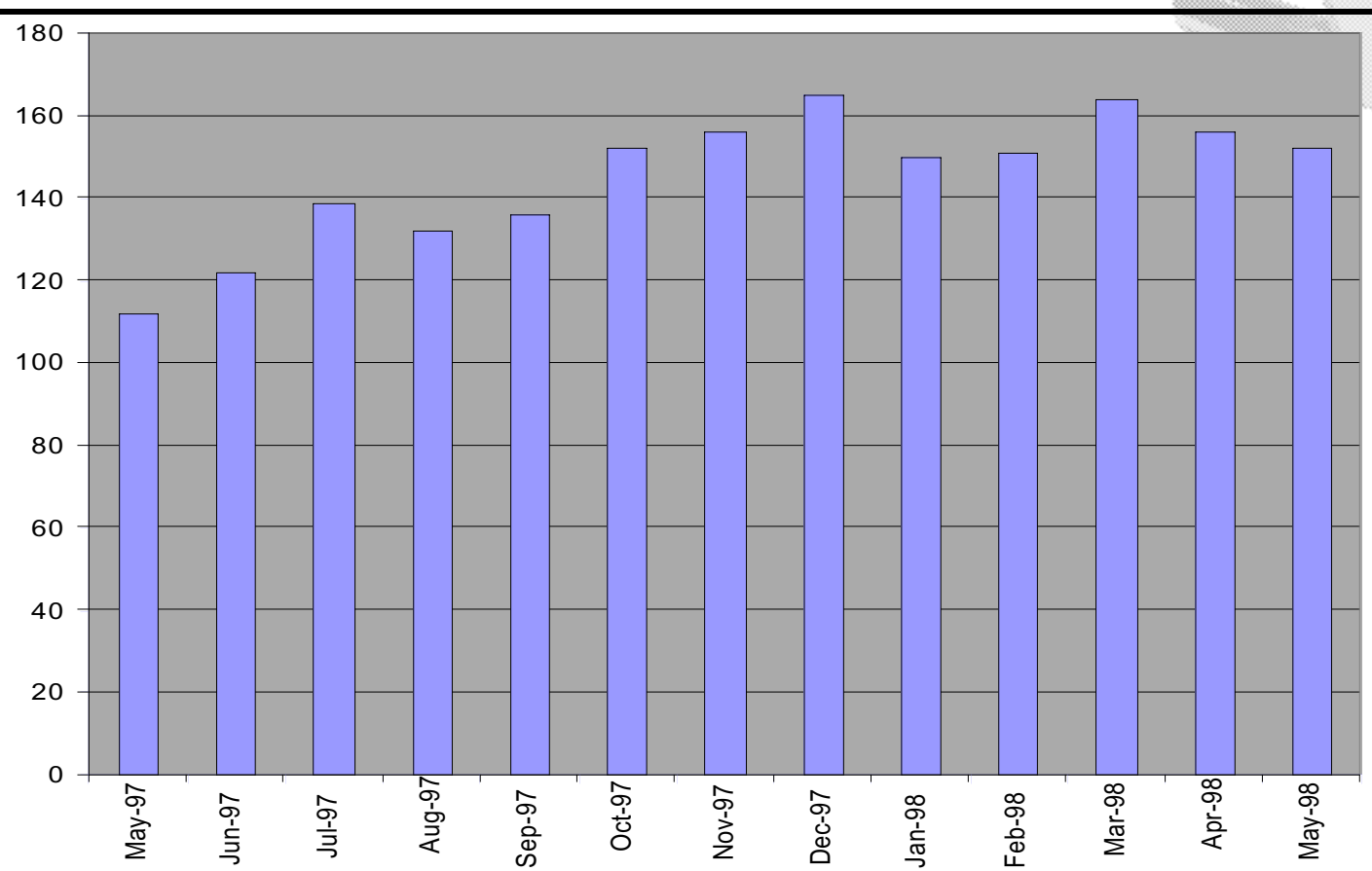
UNICOS/mk Major SPR's



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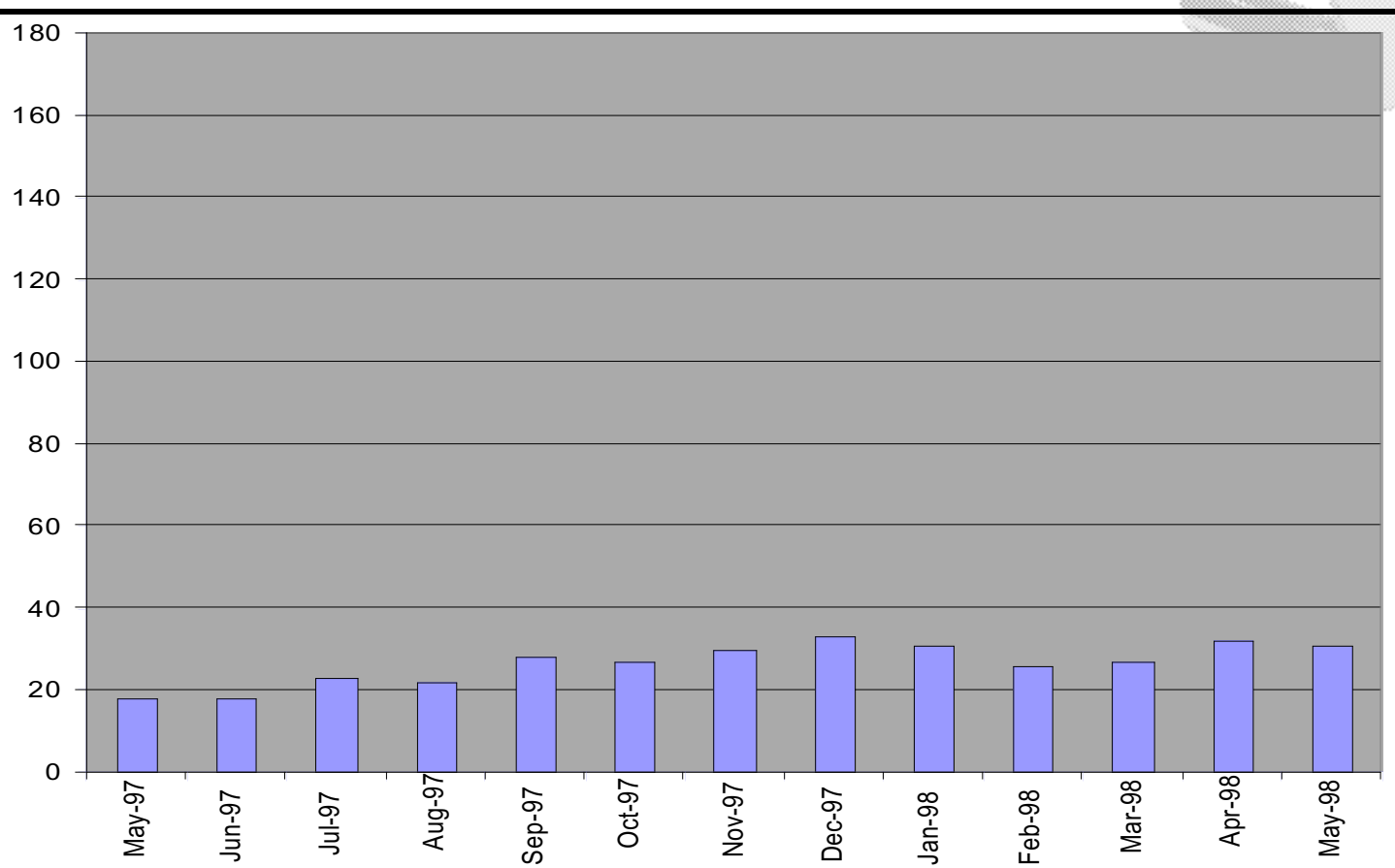
UNICOS/mk Minor SPR's



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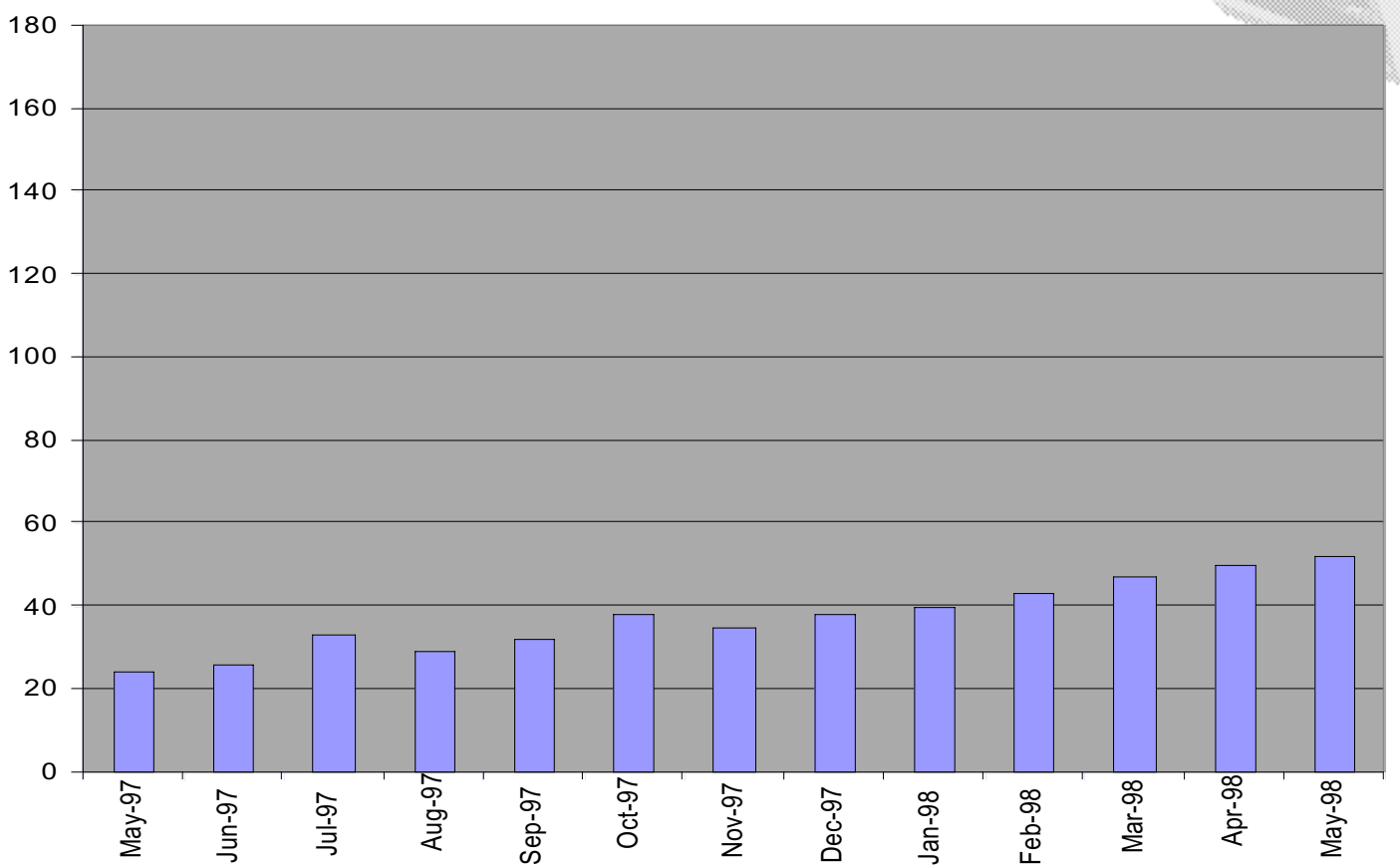
UNICOS/mk Design SPR's



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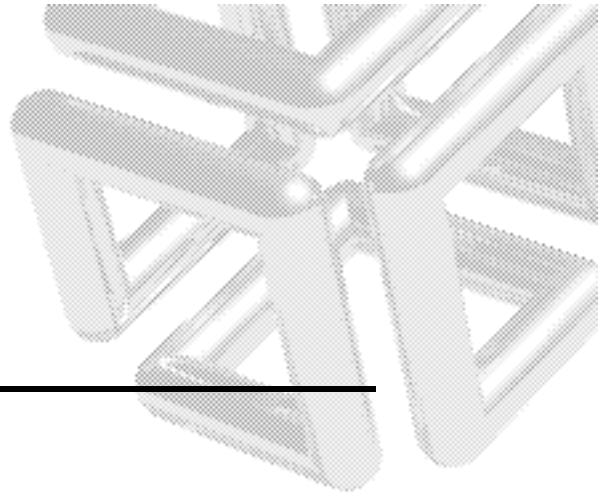
T3E MTTI



- **Stability(72 systems)**
  - Reported SW MTTI* 3059 hours as of June 8th, 1998 (1000 hours, June 97)
  - Reported HW MTTI* 1162 hours as of June 8th,1998 (600 hours, June 97)
  - Reported system MTTI* of 669 hours as of June 8th, 1998 (300 hours, June 97)

***based on CRUISE ticket data**

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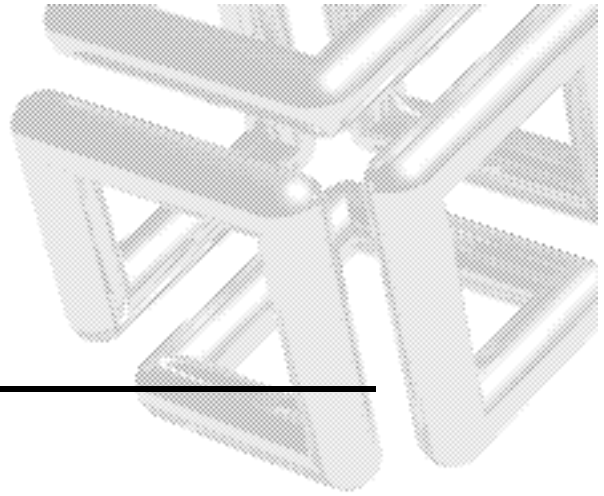
Recent T3E Software Improvements



- **UNICOS/mk 2.0.2**
  - Full UNICOS equivalence - parallel file system, accounting, checkpoint/restart, DMF, NFS, MLS, Year 2000 verification
  - Use of Remote Mount
  - pcache
  - Use of psched

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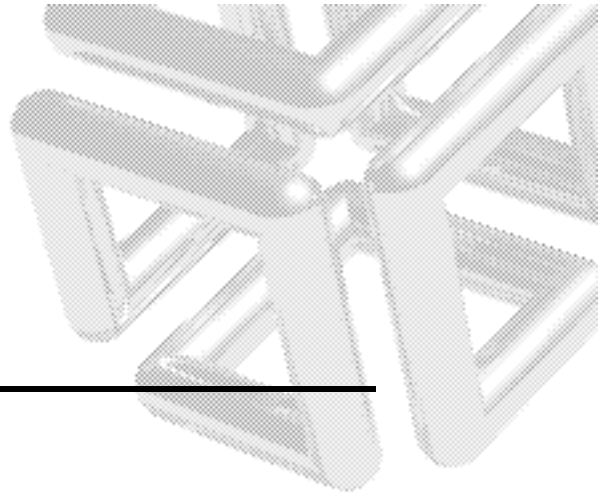
Recent T3E Software Improvements



- **UNICOS/mk 2.0.3**
  - Prime Job
  - improvements to swap
  - express message queues

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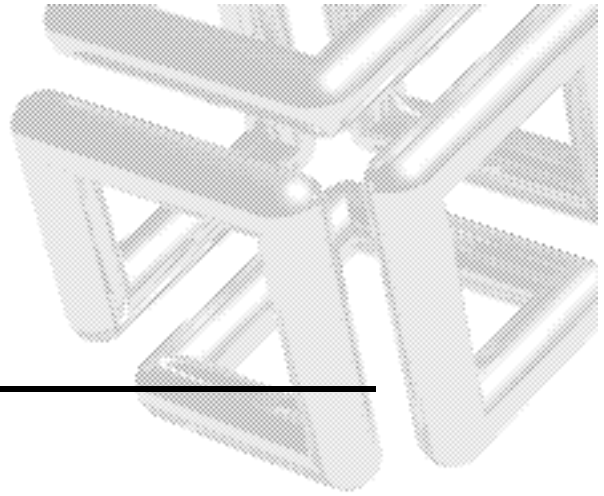
Recent T3E Software Improvements



- **Recent Software Enhancements**
  - Warm Boot
    - allows reboot of failed PEs (SW, intermittent HW)
    - allows positive change to way system is supported
  - PE Resiliency
  - Big Page sizes

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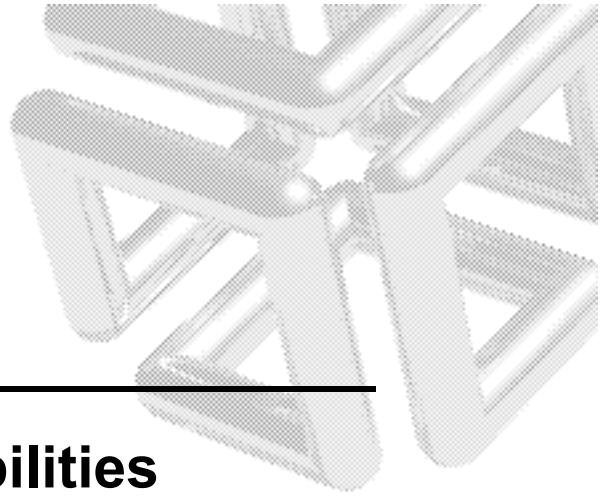
T3E Software



- **Future Software Enhancement Possibilities**
  - scheduling
    - migration/checkpoint of swapped jobs
    - synchronize restart of multi-PE jobs
    - centralize scheduling decisions in GRM
    - schedule single PE programs with psched
    - allow swap-thrash configuration parameter
  - TotalView/PAT
  - C++ and Fortran improvements
  - persistent objects

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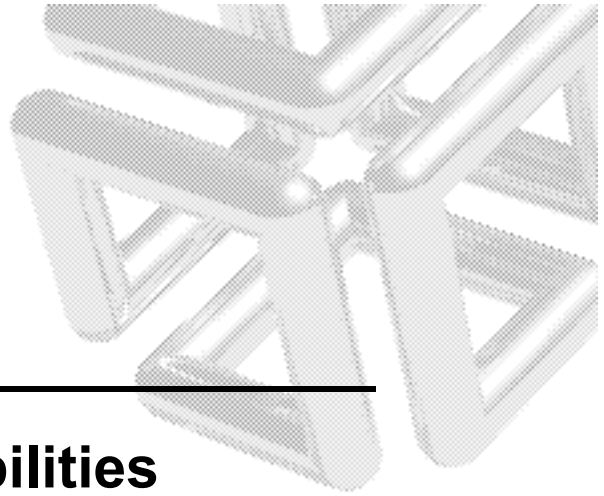
T3E Software



- **Future Software Enhancement Possibilities**
  - possible boot/dump speedups
  - investigating partitioning for concurrent HW maintenance
  - DCE/DFS

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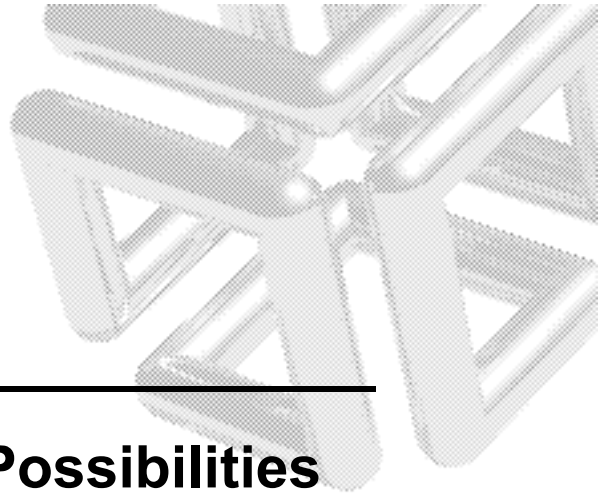
T3E Software



- **Future Administrative Enhancement Possibilities**
  - Scheduling Tuning Guide
  - Performance Monitoring Tool(3rd party)
  - Consolidated Error Message Handling (3rd party)

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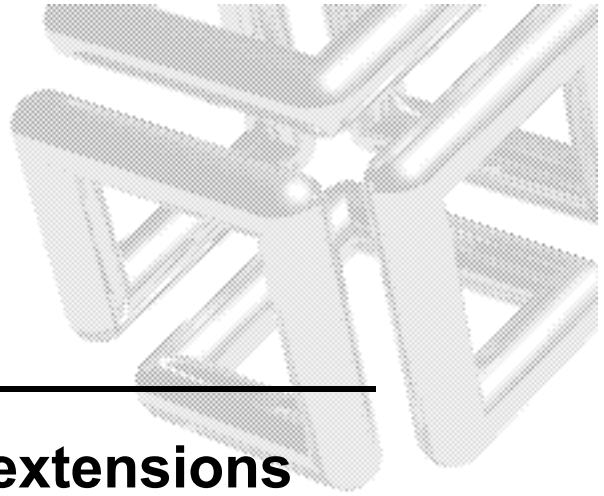
Summary



- **Have UNICOS equivalence plus MPP extensions**
- **Have improved reliability, plan to continue**
- **Continue improvements in some key areas such as scheduling and boot/dump**

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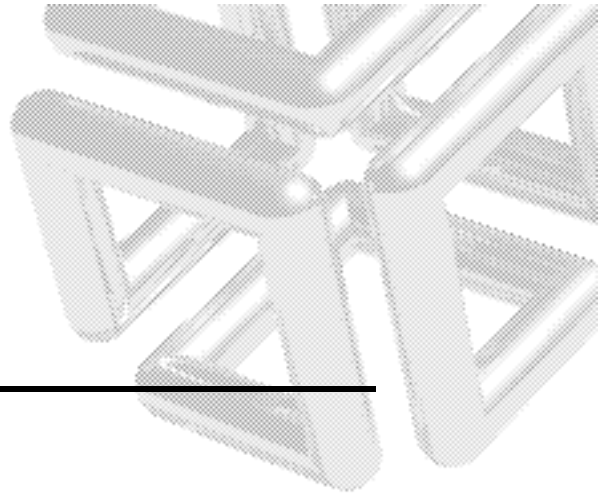
Some Achievements: Backup slides



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NPB Results: T3E-1200 vs. T3E / T3D

NPB 1 - Class A (Kernels)

EP	2.0 x T3E	6.4 x T3D
MP	1.4 x T3E	6.1 x T3D
CG	1.1 x T3E	3.0 x T3D
FT	1.4 x T3E	3.0 x T3D
IS	1.7 x T3E	7.0 x T3D

NPB 1 - Class A (Applications)

LU	1.5 x T3E	8.5 x T3D
SP	2.1 x T3E	6.2 x T3D
BT	1.9 x T3E	6.7 x T3D

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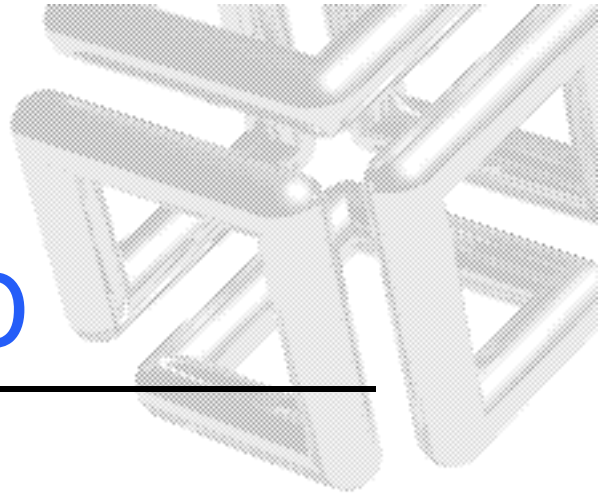
NPB Results: T3E-1200 vs. T3E / T3D



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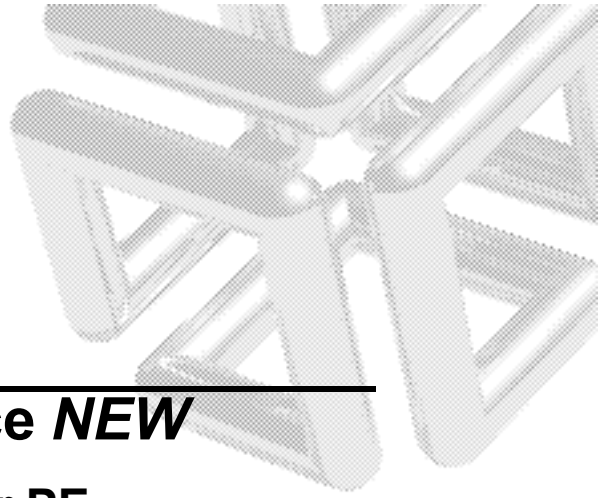
LINPACK, STREAMS and COMMS1



LINPACK HPC - Sustained Performance *NEW*

T3E	~~**390**~~	***420*** **MFLOPS per PE**
T3E-900	~~**515**~~	***620*** **MFLOPS per PE**
T3E-1200	~~**705**~~	***815*** **MFLOPS per PE**

Sustained Bandwidth

T3E	**294 ~ 666 Mbytes/sec per PE**
T3E-900	**342 ~ 833 Mbytes/sec per PE**
T3E-1200	**360 ~ 873 Mbytes/sec per PE**

Enhanced Network Latency and Bandwidth

Results from T3E-1200E (with new router chip)

MPI	5 µsecs latency, 230 MByte/sec
libsma	2 µsecs latency, 416 MByte/sec

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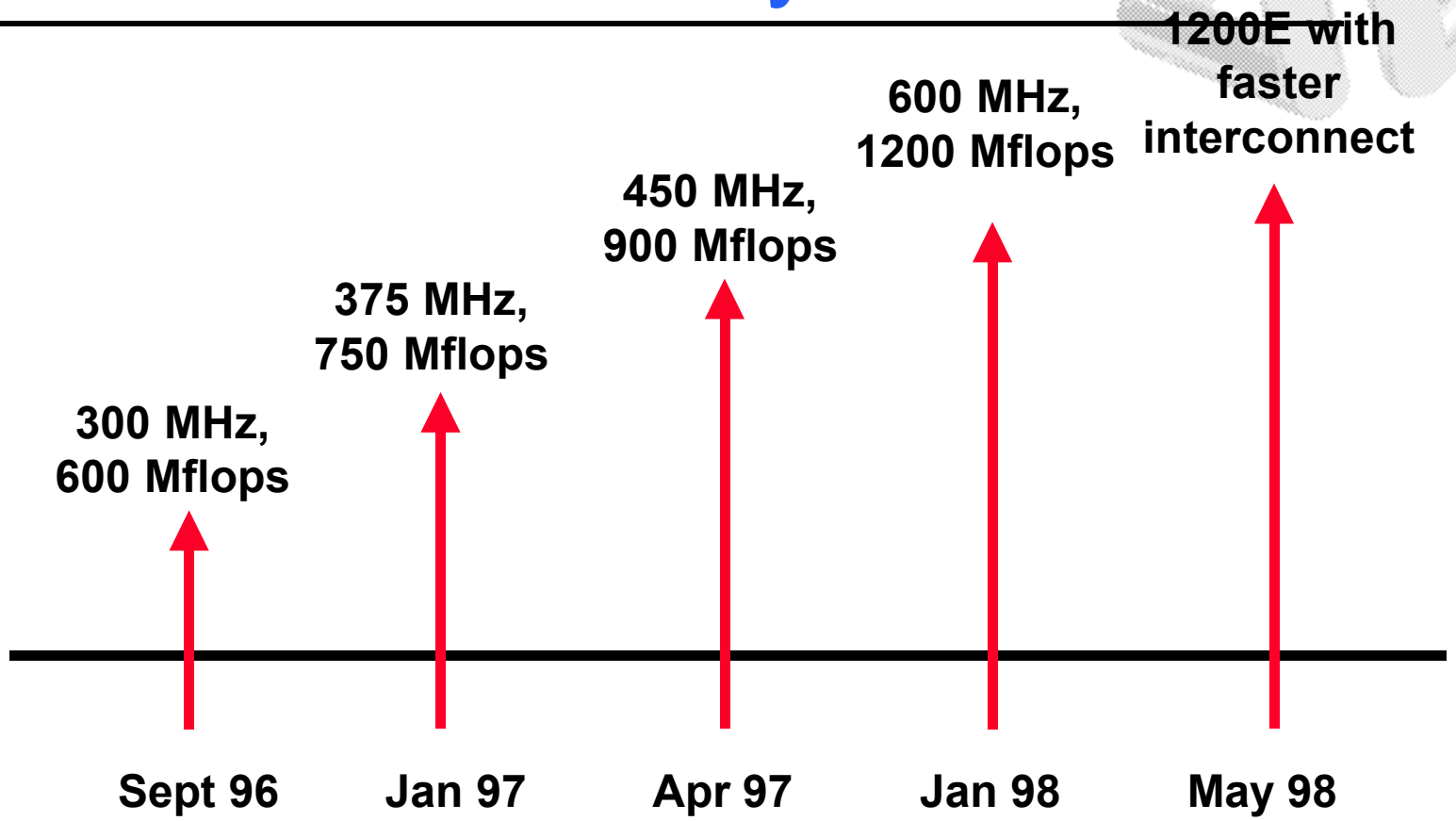
Shipments and Availability



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