

AMD

intel



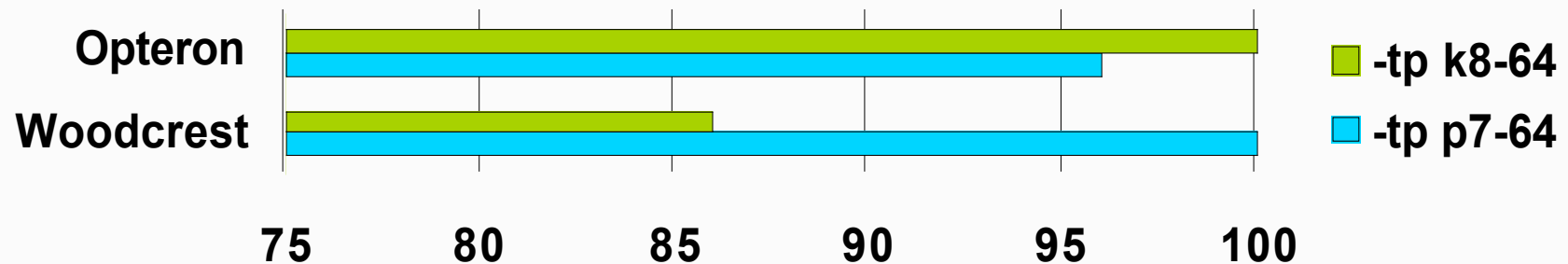
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AMD vs. Intel

The Compiler as Referee

- `pgf95 -tp k8-64`
- `pgf95 -tp p7-64`

Parallel Ocean Program

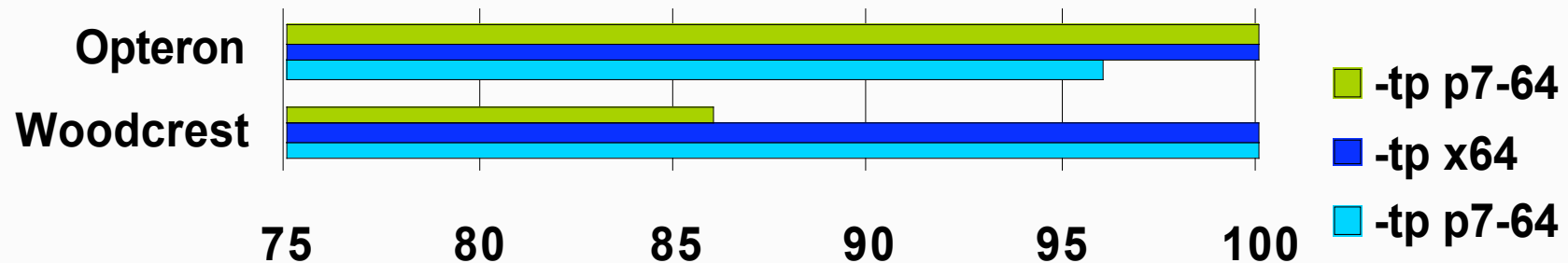


AMD vs. Intel

The Compiler as Referee

- pgf95 -tp k8-64
- pgf95 -tp x64
- pgf95 -tp p7-64

Parallel Ocean Program



PGI Unified Binary™

- Generate two versions of a function
- Select at run time which to run

- simple method

```
-tp x64
```

- targeted method

```
-tp k8-64,p7-64,core2-64
```

- tuned method

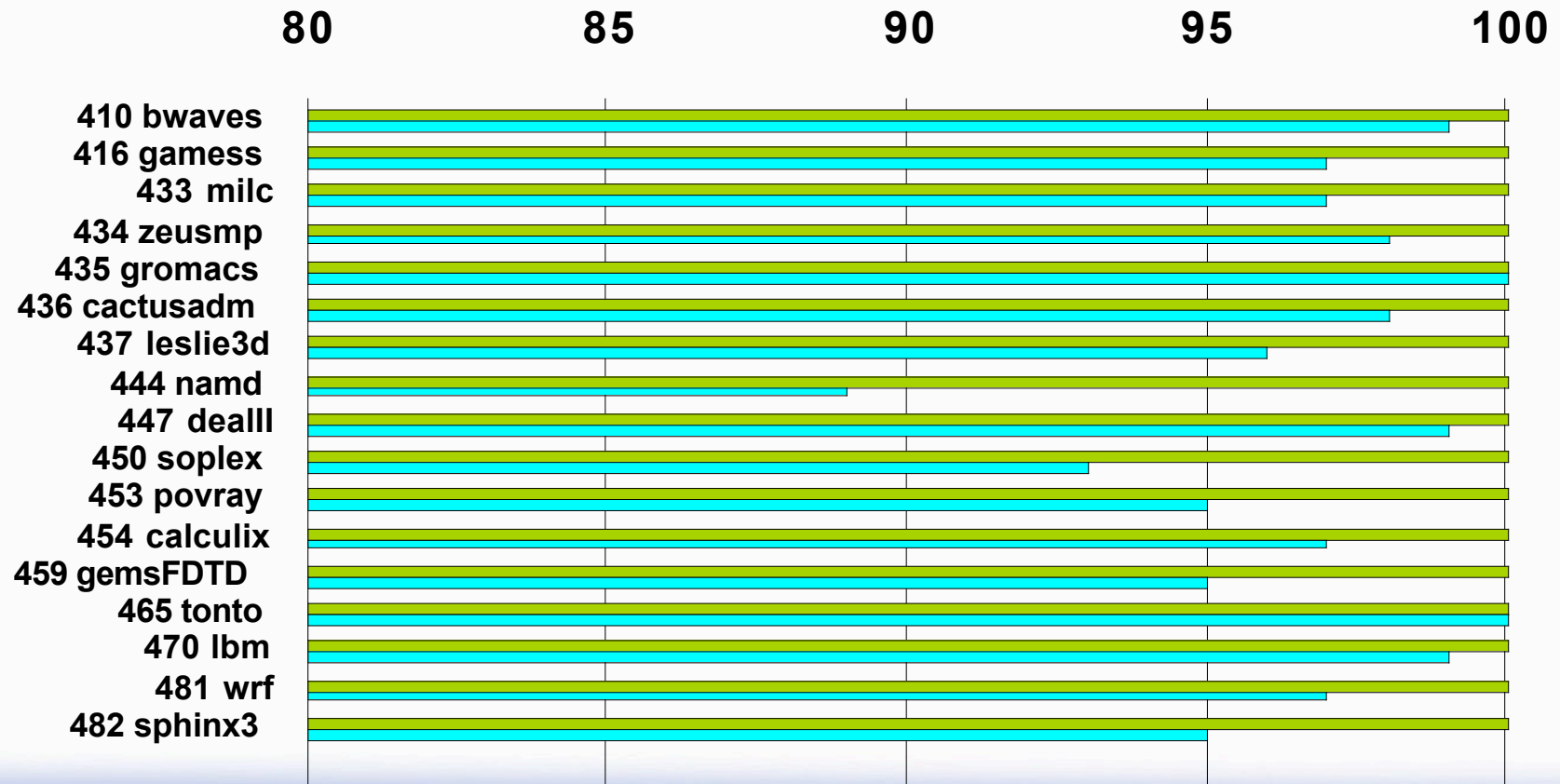
```
#pragma pgi routine tp k8-64 core2-64
```



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SPEC FP2006 Relative Performance Opteron

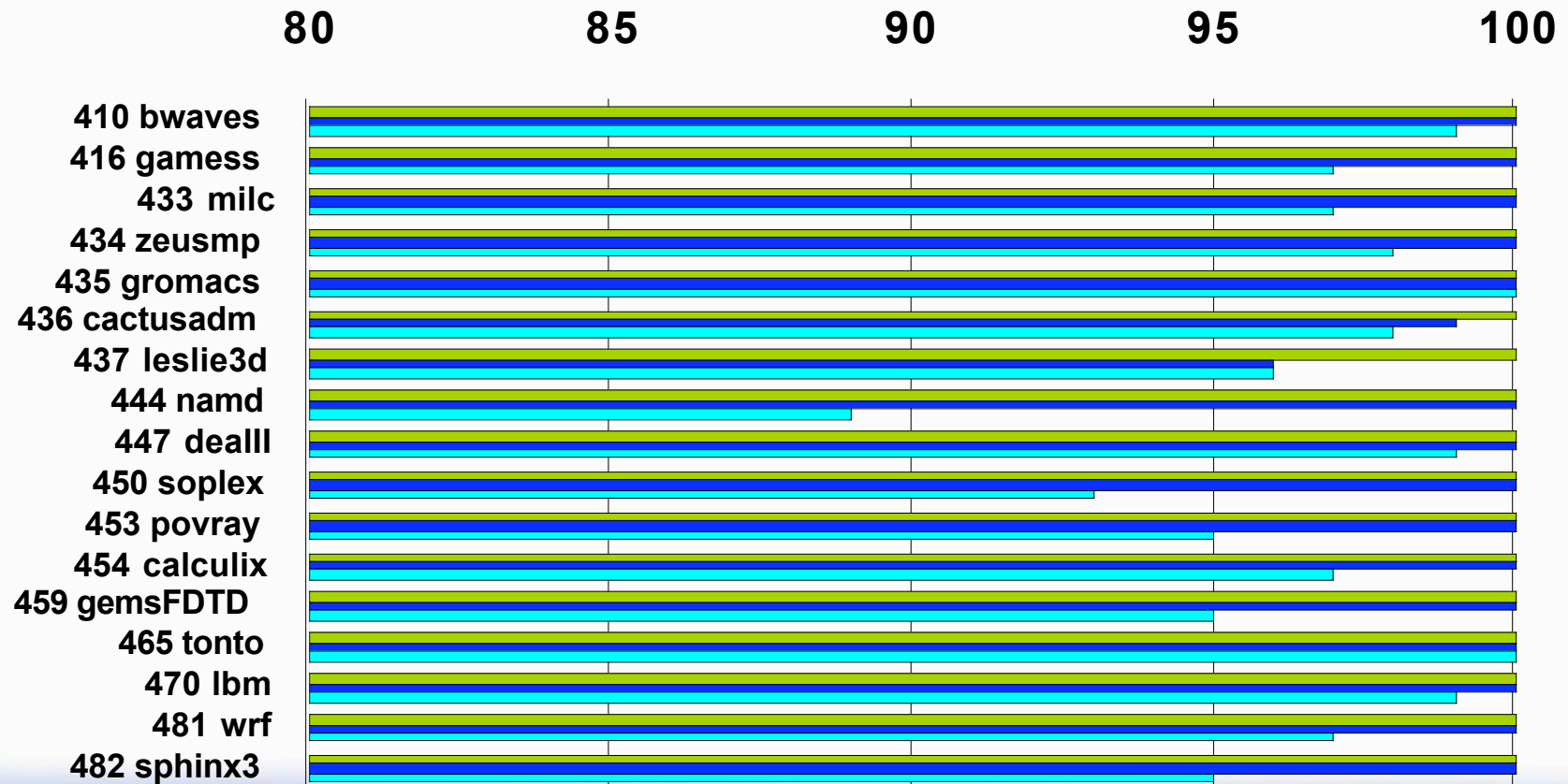
■ -tp k8-64 ■ -tp p7-64



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SPEC FP2006 Relative Performance Opteron

■ -tp k8-64 ■ -tp x64 ■ -tp p7-64

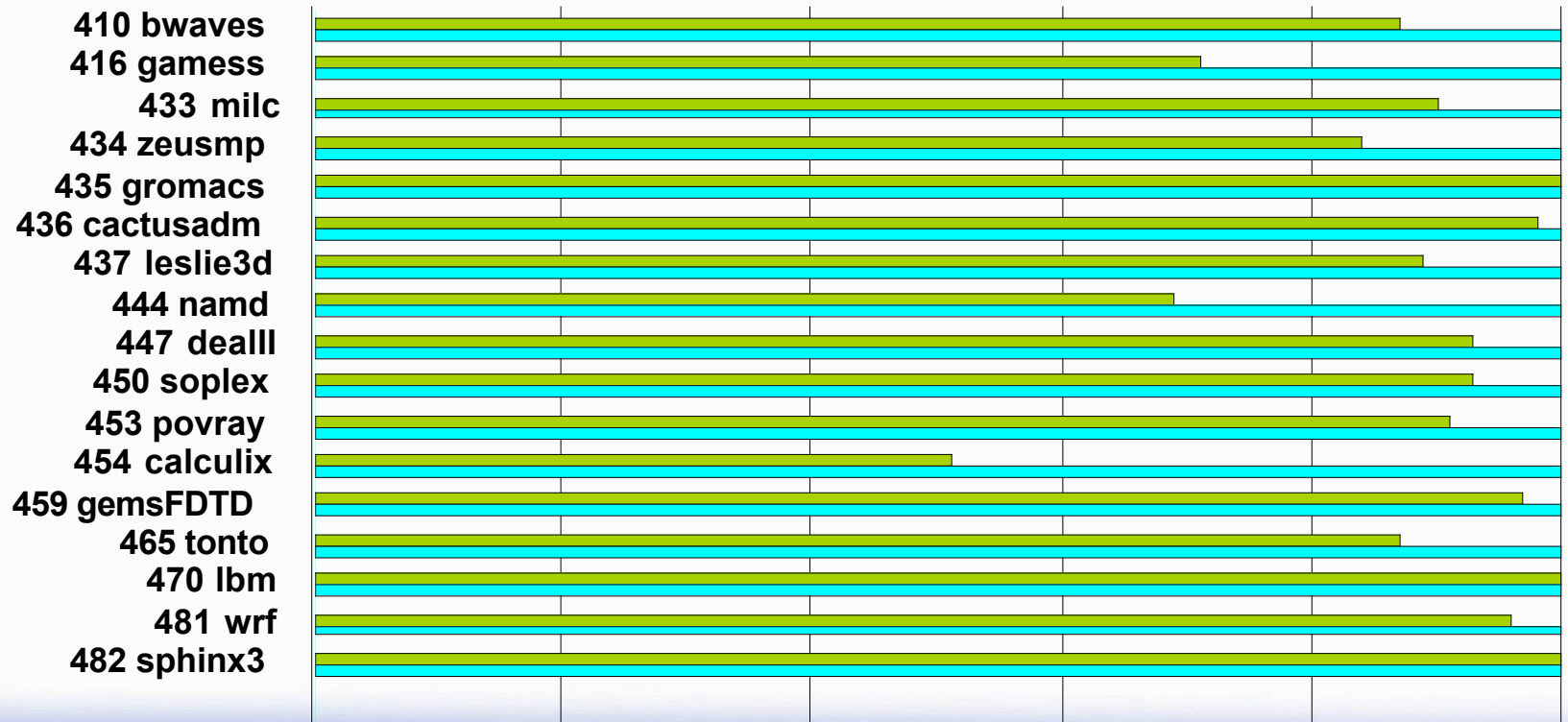


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SPEC FP2006 Relative Performance Woodcrest

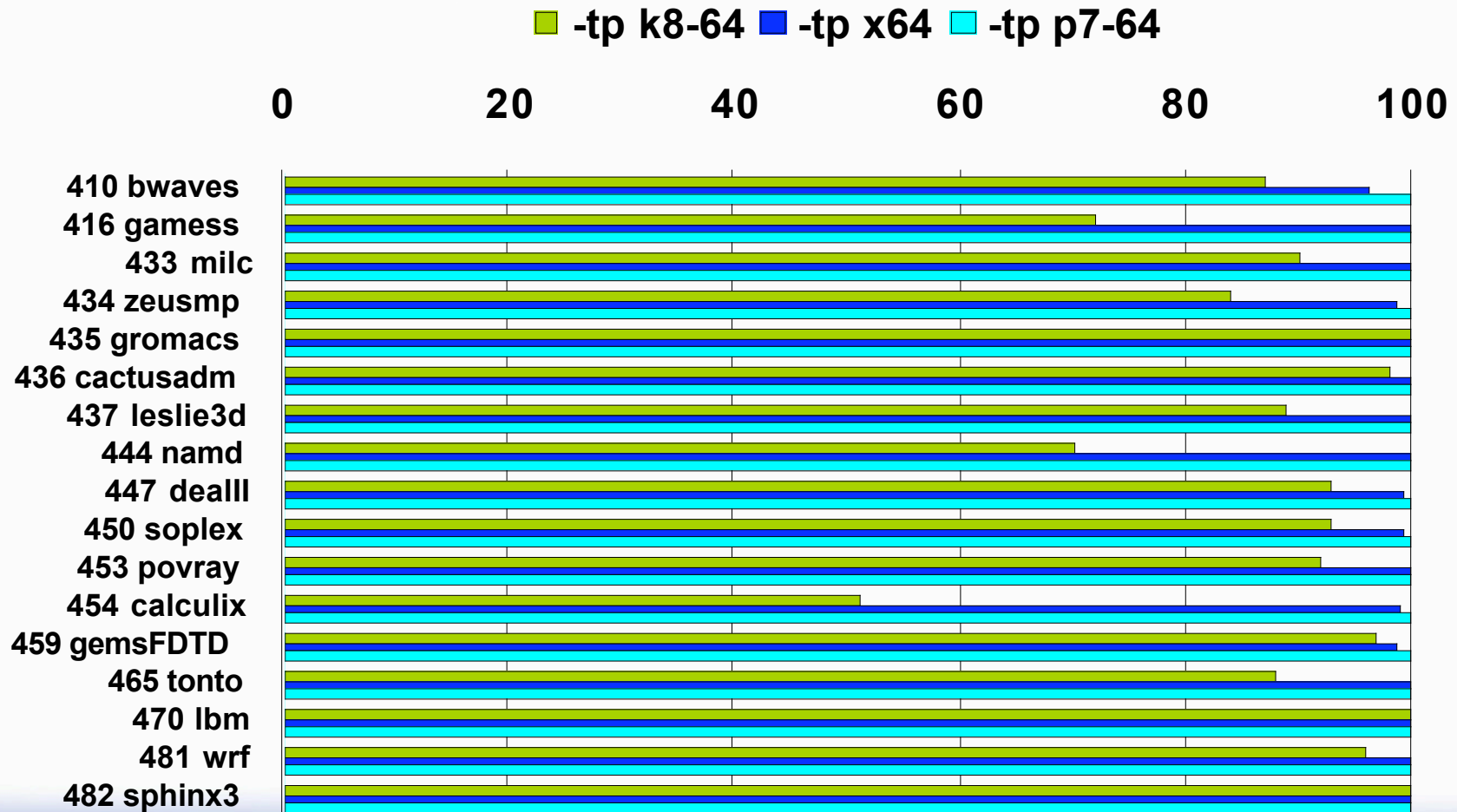
■ -tp k8-64 ■ -tp p7-64

0 20 40 60 80 100



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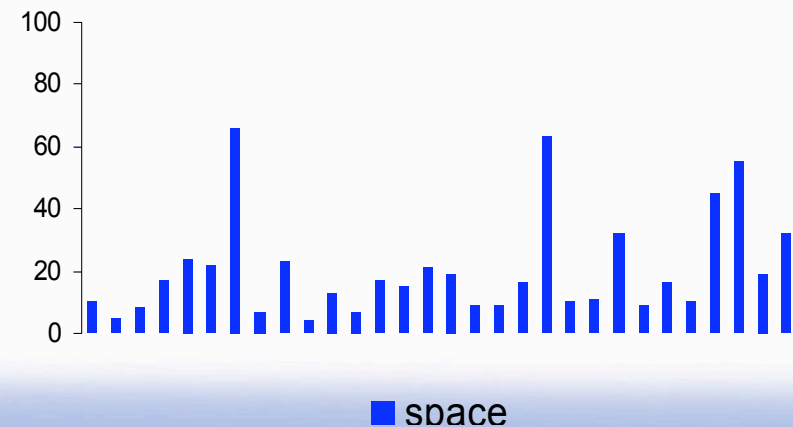
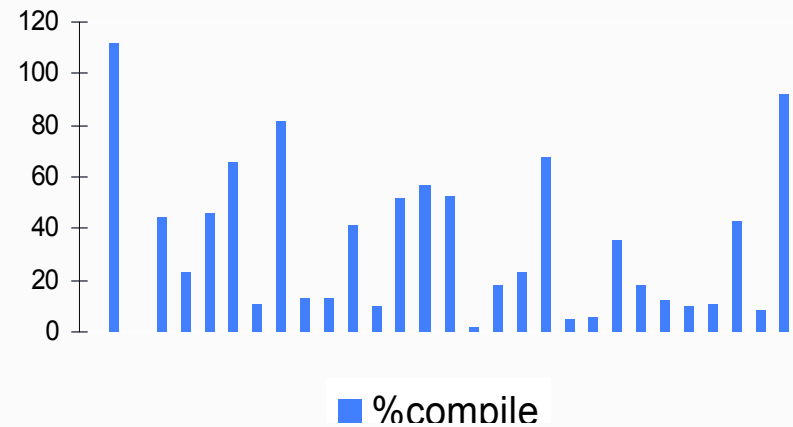
SPEC FP2006 Relative Performance Woodcrest



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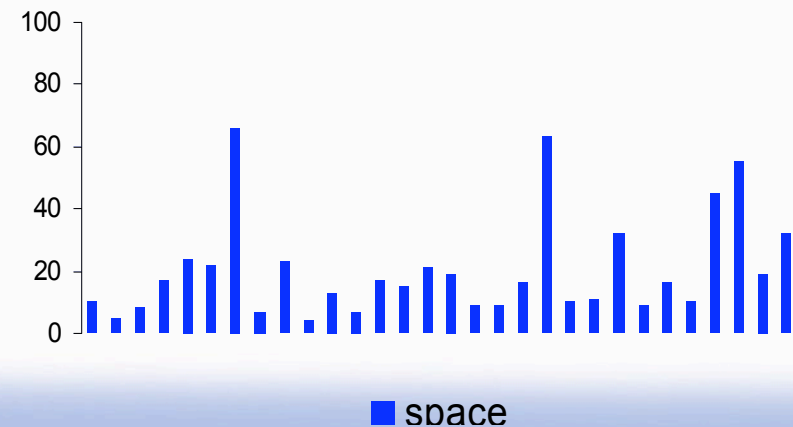
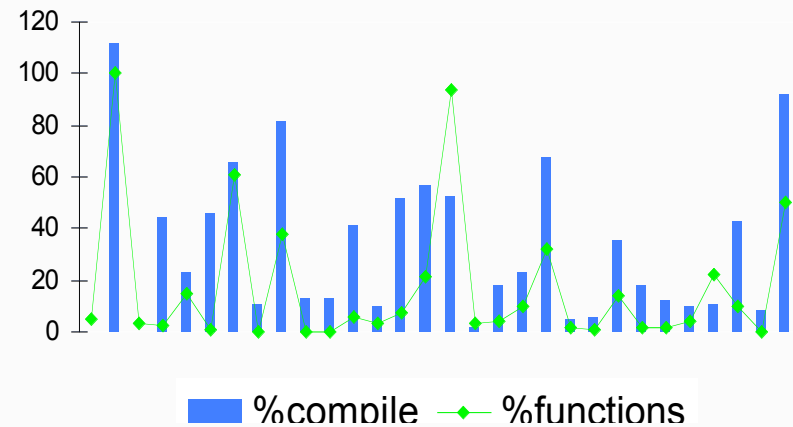
Overhead and Cost

- Compile time
 - from 10%-90%
- Disk space
 - from 10% to 70%
- Memory
 - from 10% to 90%
- Run time
 - selection cost



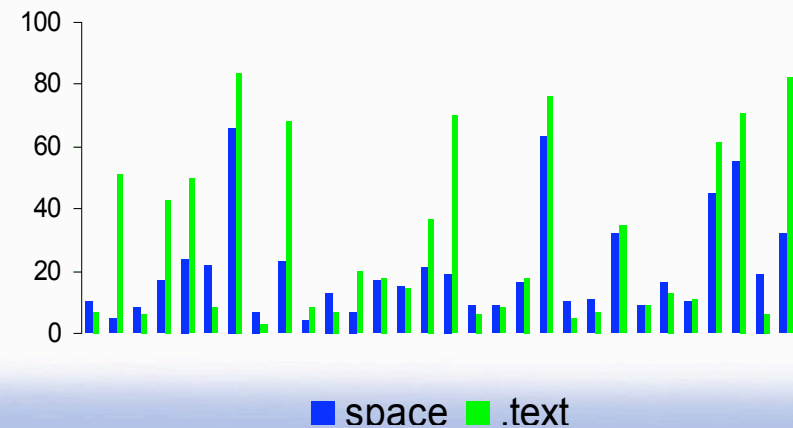
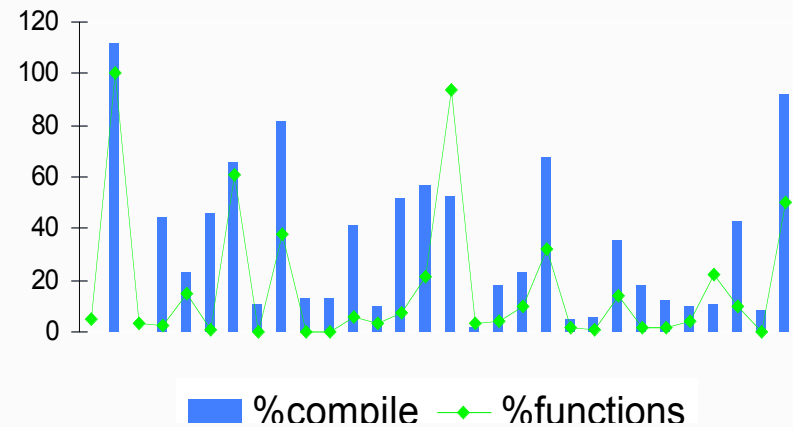
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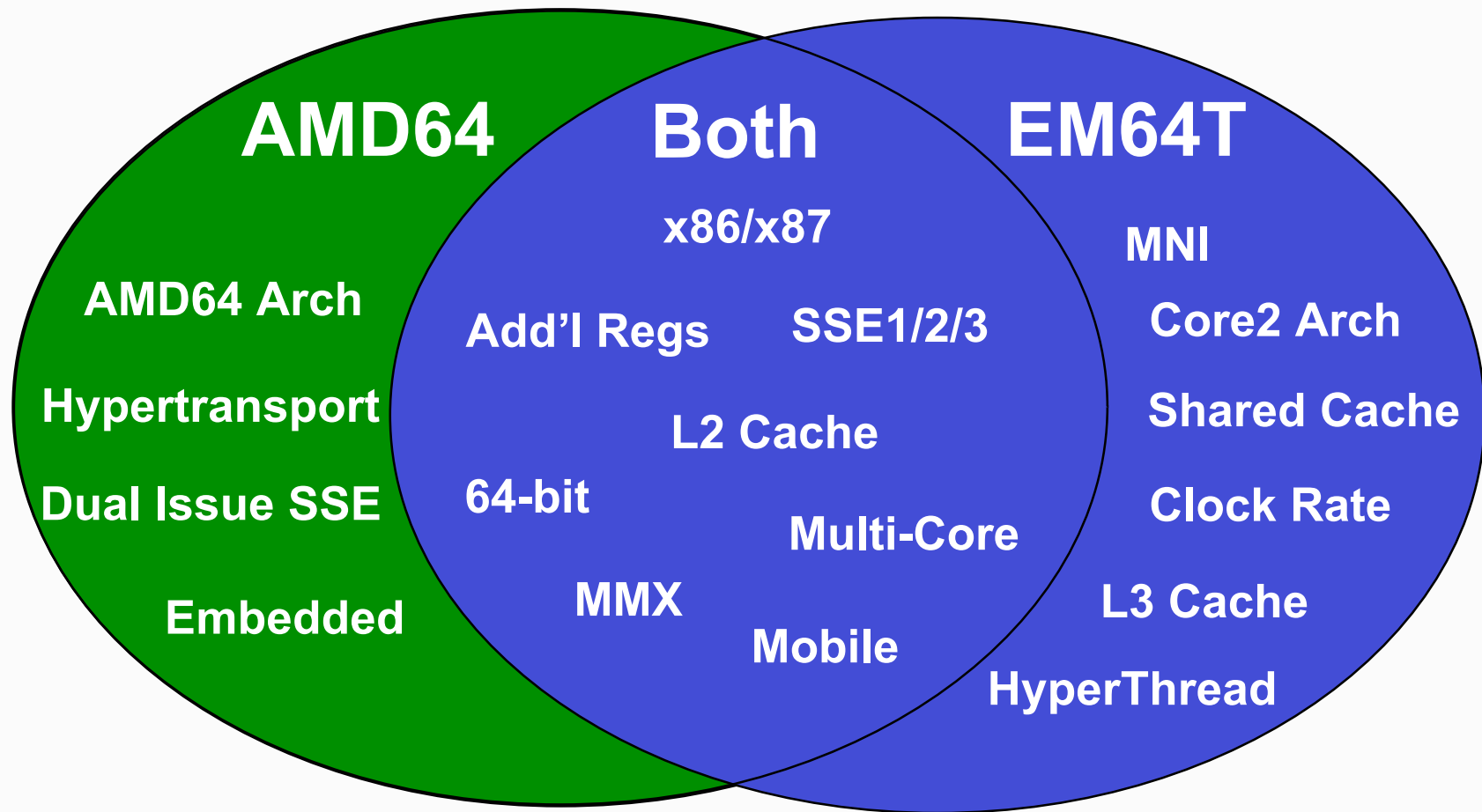


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Convergence or Divergence?



PGI Unified Binary™ Executables

- A single x64 binary including optimized code sequences for *both* AMD64 and EM64T/Core2
- SW-enabled binary compatibility
- Reduce development, tuning, manufacturing, maintenance costs
- Maximize flexibility for end-users to deploy applications across platforms
- Exploit the innovations of both AMD and Intel without fear of losing binary compatibility



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Future Work

- Reduce I-cache and Virtual Memory pollution
- Tune with profile feedback
- Reduce function selection cost

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