

XcalableMP

Directive-Based Language eXtension for Scalable and Performance-Aware Parallel Programming



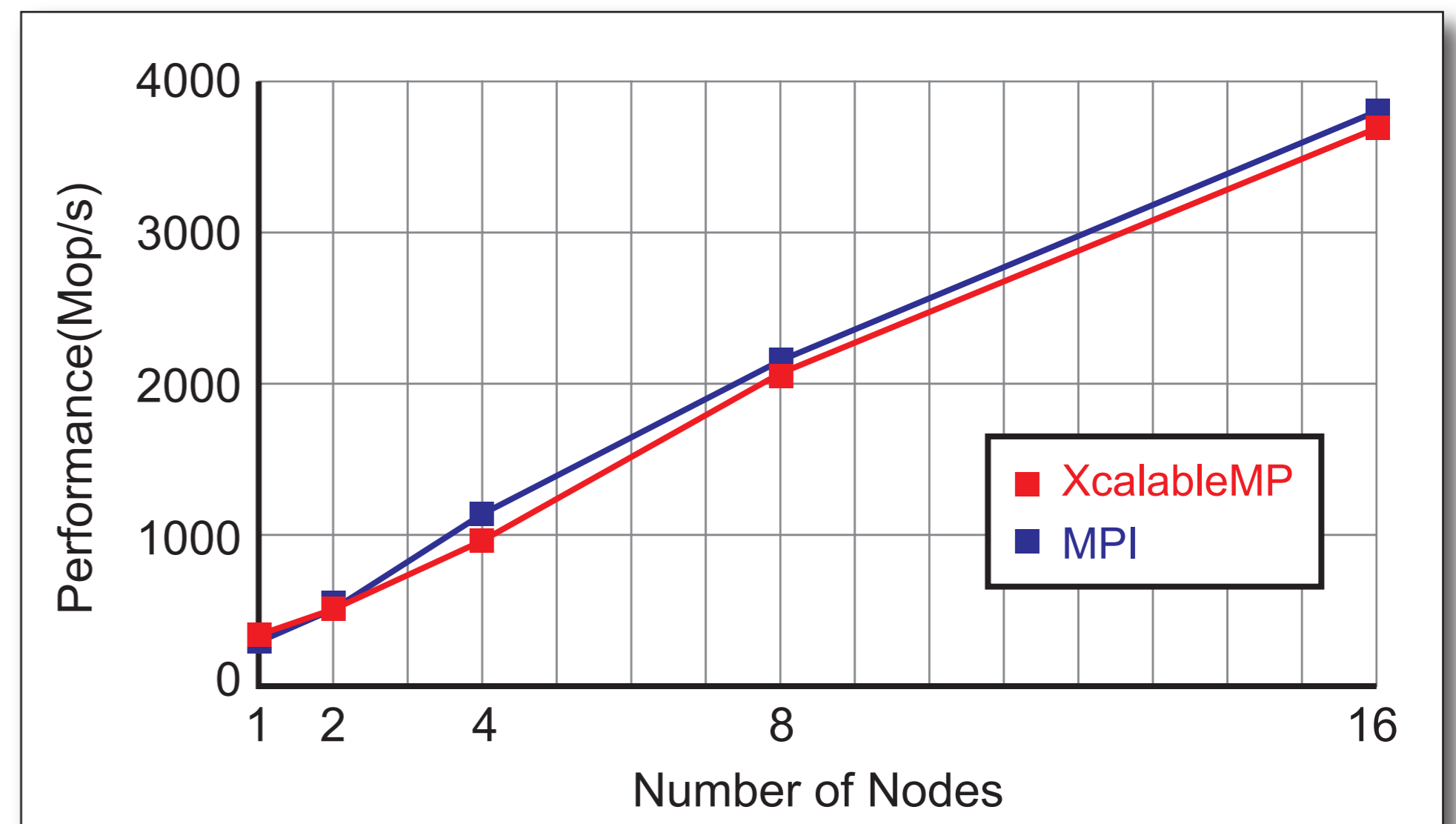
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Performance of XcalableMP

NPB-CG

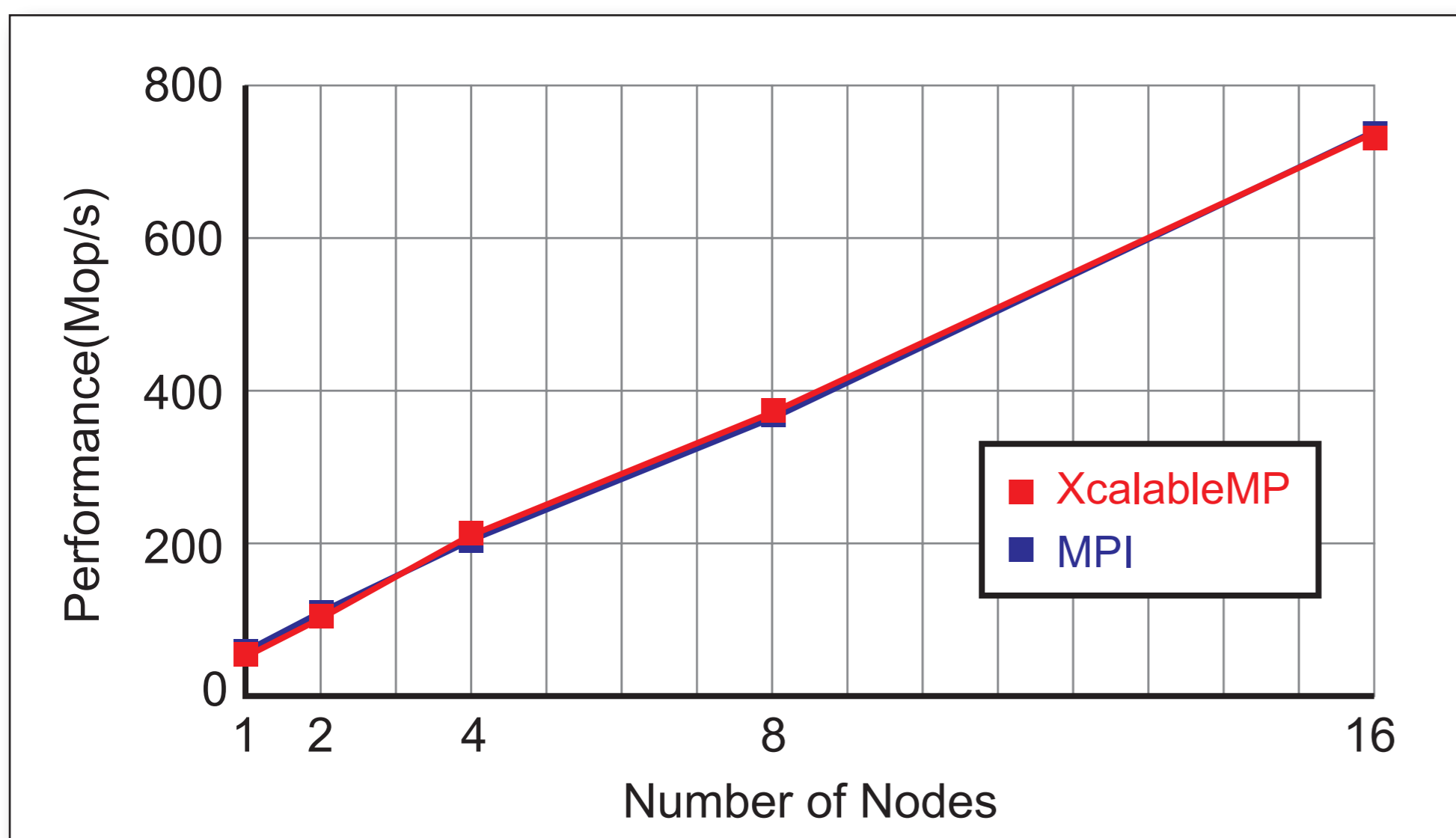
```
#pragma xmp nodes p(NPCOL, NPROW)
#pragma xmp template t(O:na+1, O:na+1)
#pragma xmp distribute t(block, block) onto p
#pragma xmp align [i] with t(i, *) :: x, z, p, q, r
#pragma xmp align [i] with t(*, i) :: w
...
#pragma xmp loop on t(*, i)
for (i = 1; i <= lastrow-firstrow+1; i++) {
    sum = 0.0;
    for (k = rowstr[i]; k < rowstr[i+1]; k++) {
        sum = sum + a[k]*p[colidx[k]];
    }
    w[i] = sum;
}
#pragma xmp reduction(+:w) on p(*, :)

#pragma xmp gmove
q[:] = w[:];
```

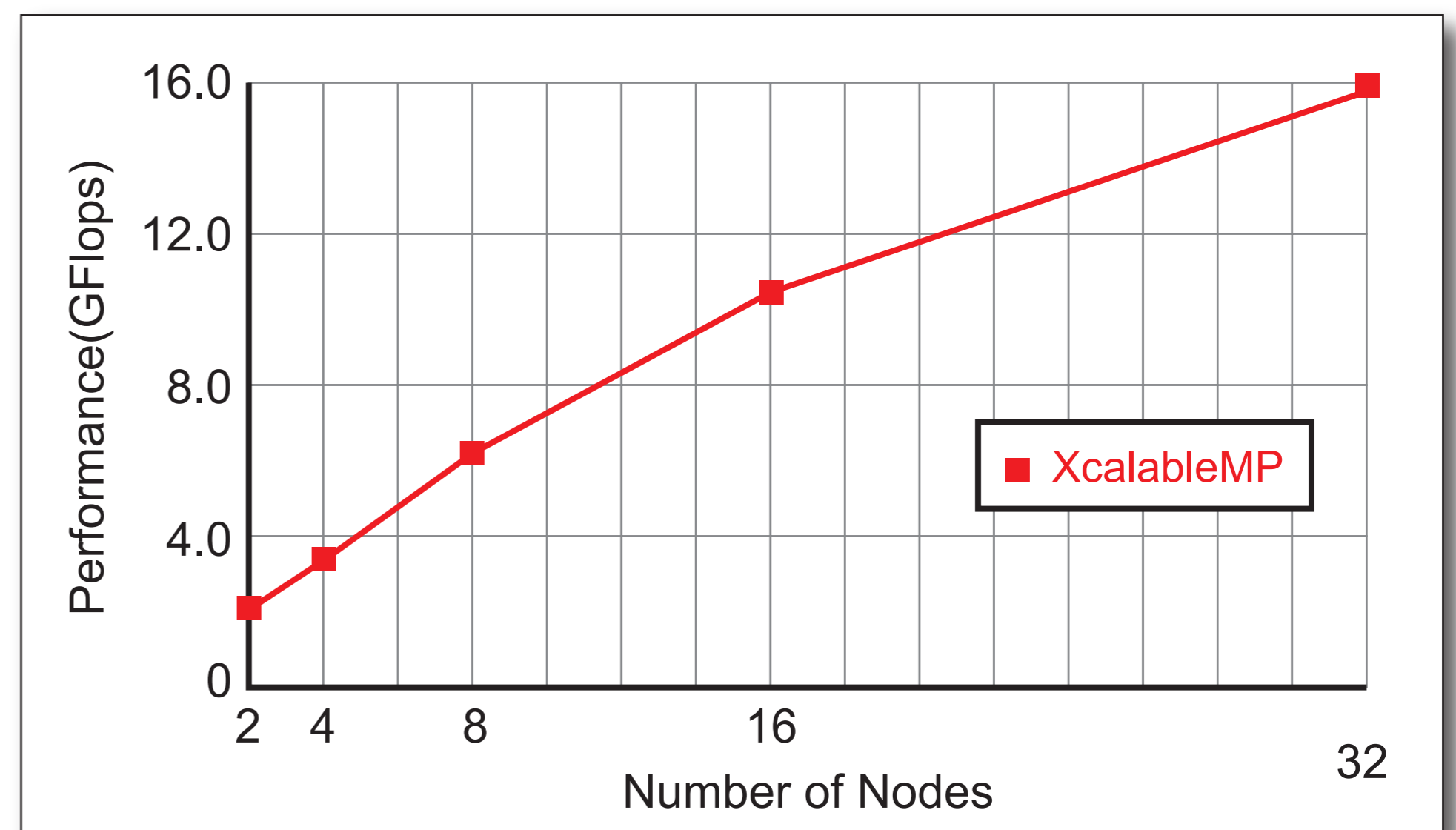


XcalableMP enables NPB-CG to be parallelized 2D-block distribution (equivalent to MPI Version), and the performance of XcalableMP is almost equal to that of MPI Version.

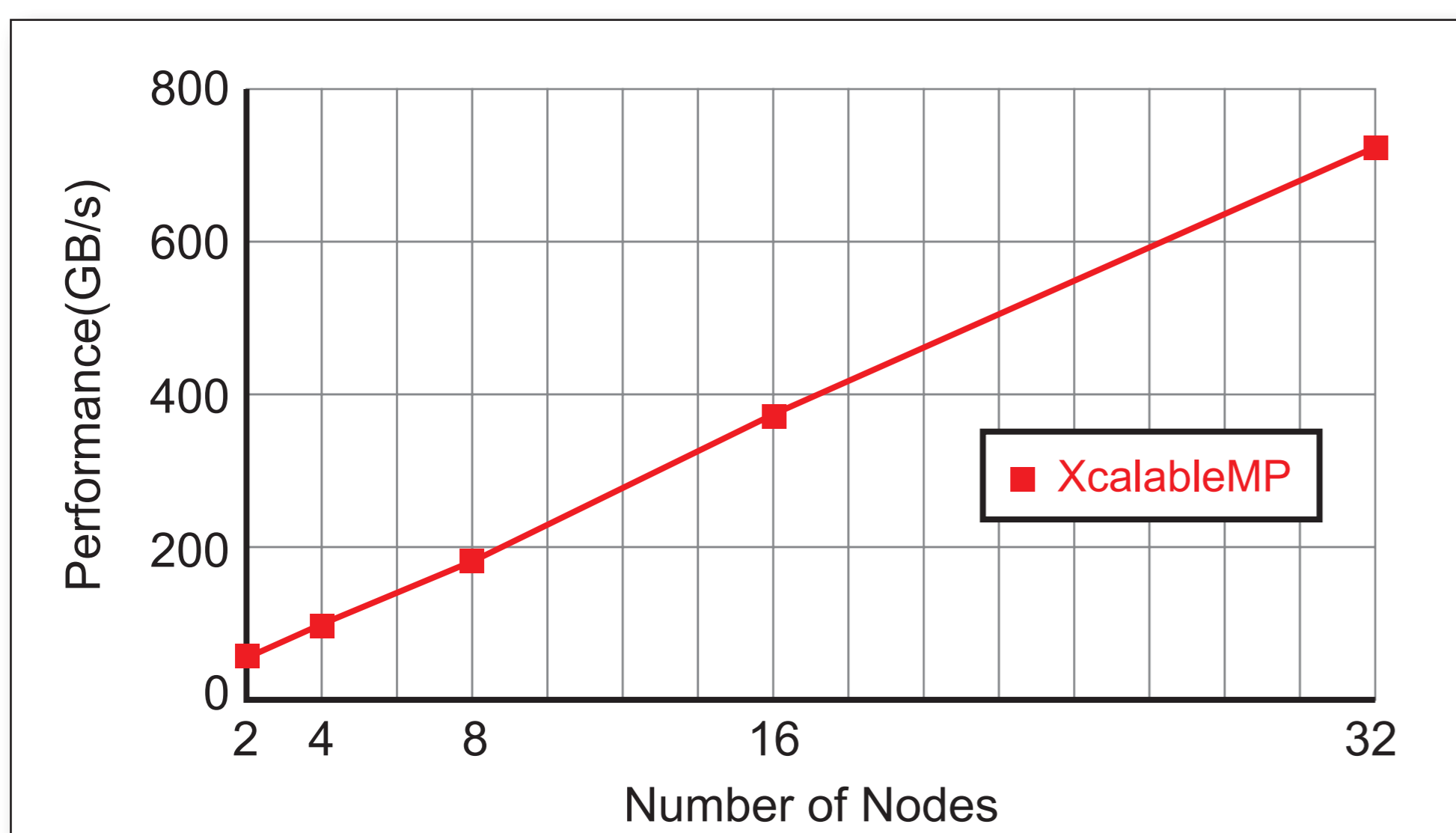
NPB-IS



HPL



STREAM



FFT

