

매니코어 환경에서 PARSEC 벤치마크 ROI 확장성 분석

An Analysis of ROI Scalability on PARSEC
Benchmark for Many-core System

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Introduction

Increase cpu core number of commercial chip

Ex) Xeon Phi



Need Operating system scalability

Introduction

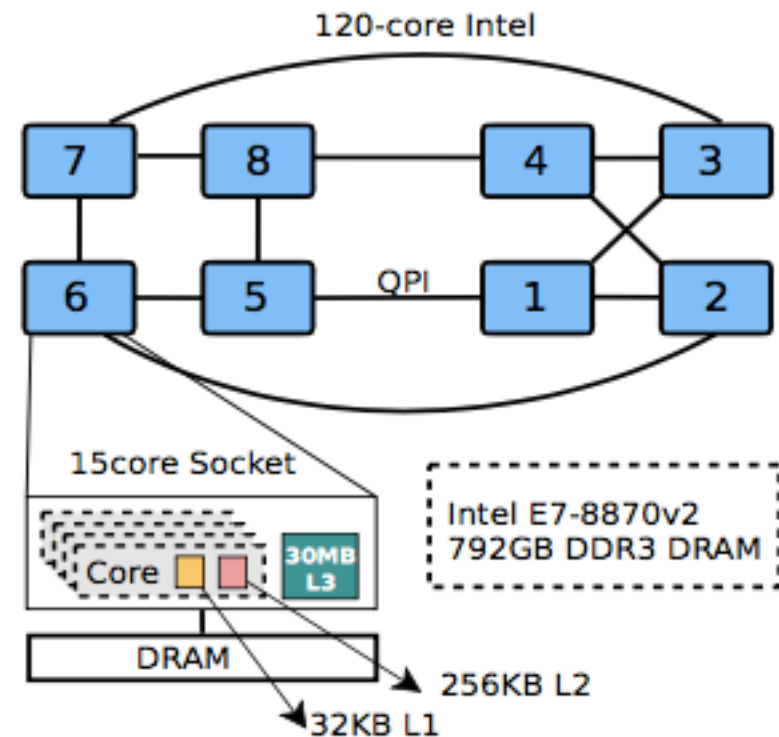
We decided to research about scalability,
especially when running multithreaded programs.

So,
analyze the scalability of the actual kernel first.

Environment

We used 120-core xeon-phi machine,
4.11-rc8 kernel version, ubuntu and
PARSEC 3.0 benchmark.

운영체제	배포판	PARSEC 버전	입력 데이터
Linux 4.11-rc8	Ubuntu 14.04	PARSEC 3.0	Native

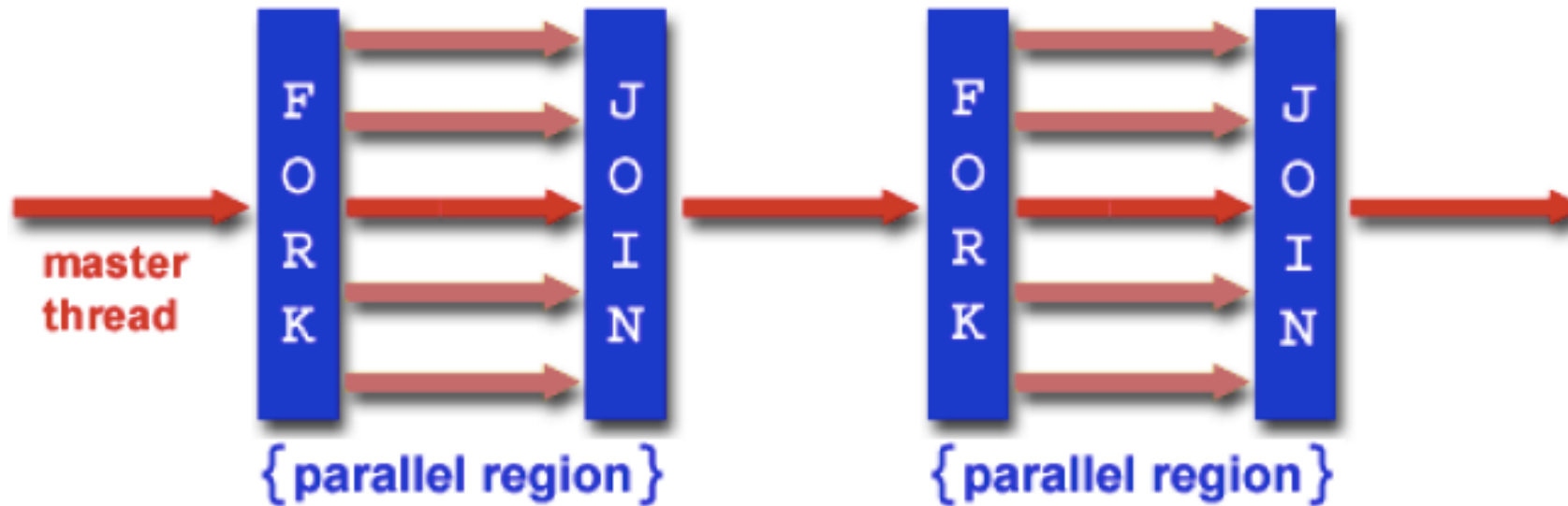


Workload

워크로드명		데이터 공유	동기화 수	병렬화 모델
blackscholes	재정 분석	낮음	8	data-parallel
bodytrack	컴퓨터 비전	높음	2661	data-parallel
canneal	Engineering	높음	34	unstructured
dedup	엔터프라이즈 저장소	높음	160598	pipeline
ferret	유사 검색	높음	345778	pipeline
freqmine	데이터 마이닝	높음	990025	data-parallel
raytrace	재정 분석	낮음	23	data-parallel
streamcluster	데이터 마이닝	낮음	129918	data-parallel
swaptions	재정 분석	낮음	23	data-parallel

ROI (Region of Interest)

The interval in which the actual parallelization is performed



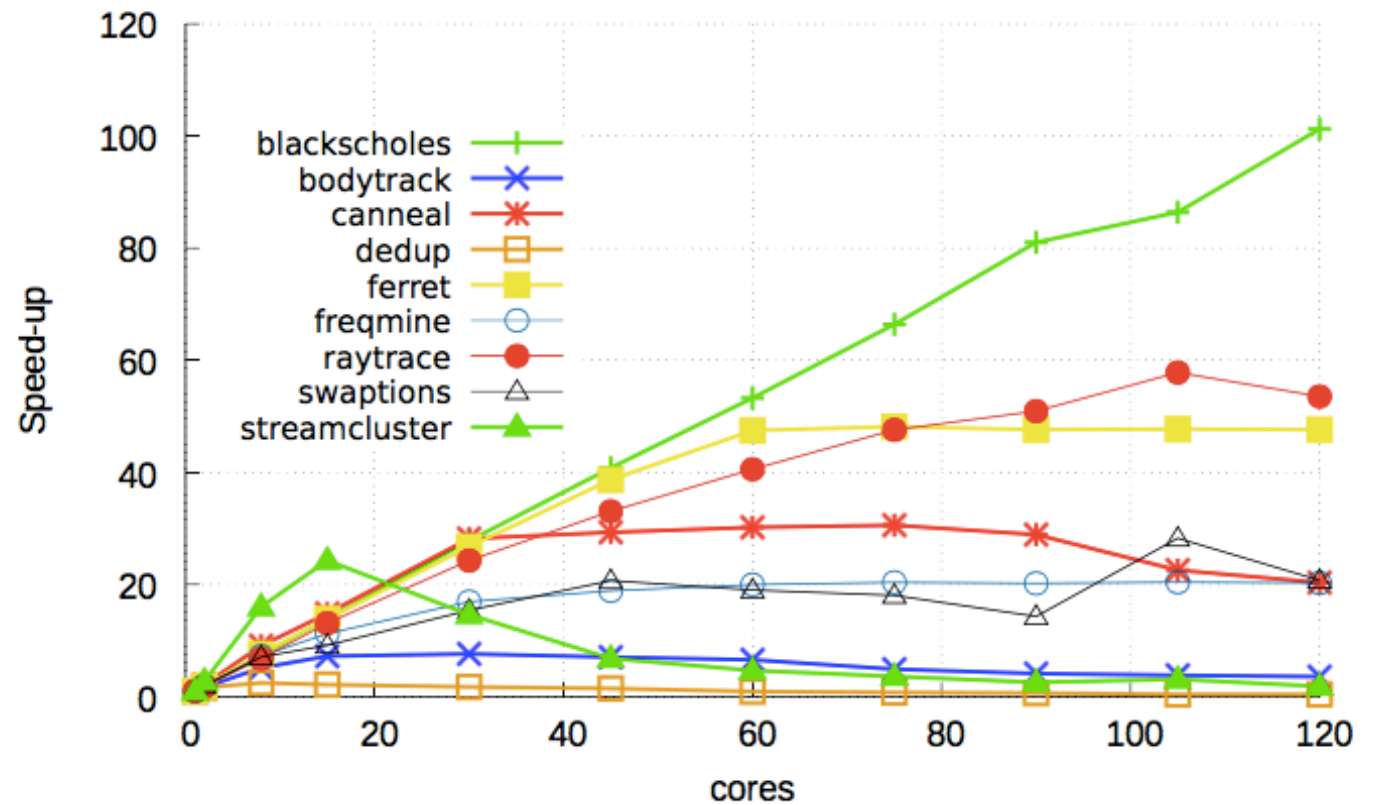
Result

We were able to divide the results into two groups based on the degree of data sharing.

데이터 공유	
높음	낮음
bodytrack, dedup, canneal ferret, freqmine(A)	streamcluster raytrace, swaptions(B)

Result

Although there was a difference in the experimental results, we confirmed that all workloads except for blackscholes had problems with scalability.



Thank you