

Scheduling Multi-source Divisible Loads on an Arbitrary Networks with Granularity Constraints*

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Abstract. Many interconnection networks have been proposed and studied in the work to date on divisible load scheduling.

I want to focus on multi-source data injection problem. The practical machines have load injected into their interconnection fabric at multiple points simultaneously.

I want to consider from the following perspectives:

- The topology of networks:
 1. linear chain, buses[5], trees[7], tori, regular mesh[12], hypercubes[1], general networks[3]
 2. Kinetic clustering method[9] which means the user can add/drop some data injection source during the system is running.
 3. Constrain of Data injection position. For example, the company need there must be a data injection in one specific location and we can decide the other locations
- Data property:
 1. Big Chunk Data: for example the big flat file[5], we try to minimize the total time
 2. Streaming Data: for example Surveillance video[2] [10], mobile phone camera video stream. Optimize the max flow in the data network in a stable situation.
 3. Data has granularity limitation[8]
- Node :
 1. workstations or sensor node has a limit buffer size[8]
- Method:
 1. Superposition[11][6]
 2. Queue theory. not only consider the M/M/1[4], we also can think about the M/M/K or different data distribution function. which means some nodes consist of a cluster and share the memory together.

Key words. divisible load theory, granularity, queuing theory, kinetic clustering, superposition, three-dimensional network

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*Submitted to the editors DATE.

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