Toward parallel financial computation: valuation of mortgage-backed securities

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Abstract:
The valuations of complex financial instruments such as mortgage-backed securities and their derivatives in volatile interest rate environments are a vital part of risk management and asset management. Since these valuations are computationally intensive, major financial institutions have turned to highly advanced supercomputers in search of better performance. The search has largely ignored a significant pool of computational power that is already widely available in these financial institutions-large networks of relatively low cost workstations that are lightly loaded or even idle for large periods of time. This paper presents a mortgage-backed securities valuation parallel architecture which consists of a pool of general purpose workstations using a message-passing mechanism. The experimental system is running in an environment consisting of up to 16 workstations. The processing time under a parallel processing scheme is significantly reduced.

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