以新的信賴模型提昇分散計算環境之整體計算品質

摘要

在龐大且開放的分散式計算環境中，傳統的信賴模型由於缺乏完善的信賴程度更新機制，很容易出現節點間推薦優良服務的效能低落、服務熱點產生、甚至是無法有效排擠詐欺服務的問題，因而導致額外成本的付出。本論文利用社會學行動理論與人際環境關係理論，設計的一個新的信賴模型。在此信賴模型中，發展節點之間的「合作」、「競爭」 以及 「同業公會」 等橫向關係，提升節點間信賴程度的更新效率，進而增進信賴模型的穩定性。我們設計了一個有視覺化介面的分散式計算環境動態模擬器，以測試信賴模型在面對動態環境中無法預期的計算節點 「上線」、 「離線」、 「無預警當機」 甚至 「出現詐欺服務」 時的應變能力。模擬實驗證實，我們的信賴模型在整體服務滿意度、計算成本等指標上，均有較佳的表現。

Improving Overall Computation Quality of Distributed Computing Environment with a New Trust Model

Abstract

In a large open distributed computing environment, due to the lack of a good mechanism for trust update among computing nodes, traditional trust model often encounters problems such as low quality of service recommendation, occurrence of hot spots, and no effective mechanism to exclude deceptive nodes. In this thesis, we use the action theory and inter-person relation theory in social science to design a new trust model with relations between nodes such as cooperation, competition, and guild to improve the efficiency and stability of trust update. We have designed a dynamic simulator with a visual interface for distributed computing to test the abilities of the trust model under scenarios such as bringing nodes on-line, taking nodes off-line, unexpectedly service outage, and occurrence of deceptive nodes. Our experiments revealed that our trust model has superior performance in various indices such as service satisfaction and computational cost.