Towards Cloud Bursting for Extreme Scale Supercomputers

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Abstract

1 Introduction

Why we need to federate Supercomputer and Public Cloud

1. Power problem in summer
2. Users request more machines than available

background information:

1.1 Cloud Computing

1.2 Cloud Bursting

1.3 Performance Comparsion

1.3.1 CPU Performance

1.3.2 Memory Performance

1.3.3 Ethernet Performance

Since the biggest problem will be how to transfer data between two cloud environment, in this paper focus on I/O performance.

2 I/O Buffer Model Overview

figure and introduction

3 I/O Buffer Model

3.1 Computation Time

$$\text{Throughput} = \begin{cases} D_1(C_2) & \text{first solution} \\ min\{m_1(n_1), I(n_1, n_2), e_2(n_2)\} & \text{second solution} \end{cases}$$

3.2 Cost

$$def \quad T_1 = \frac{Data}{D_1(C_2)}$$

$$T_2 = \frac{Data}{min\{m_1(n_1), I(n_1, n_2), e_2(n_2)\}}$$

$$A = C_2 \times C_2\_Money(T_1)$$
$$B = C_2 \times C_2\_Money(T_2) + n_1 \times C_2\_Money(T_2) + n_2 \times C_2\_High\_Money(T_2)$$

$$\begin{cases} A < B & \text{first solution is better} \\ A > B & \text{second solution is better} \end{cases}$$

4 Evaluation

use benchmark data to evaluate model.

5 Related Work

6 Conclusion

Reference