Towards Cloud Bursting for Extreme Scale Supercomputers

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Abstract

1 Introduction

- Supercomuter introduction
- Why we need to federate Supercomputer with Public Cloud
  1. Power problem in summer
  2. Users request more machines than available
- Federation as one solution.
- Since the biggest problem will be how to transfer data between two cloud environment,So in this paper focus on I/O performance.
- I/O buffer model.
- contribution:performace comparsion and I/O buffer model.

2 Background

background information:

2.1 Cloud Computing

2.2 Performance Comparsion

2.2.1 Ethernet Performance

2.2.2 I/O performance

3 I/O Buffer Model Overview

figure and introduction

4 I/O Buffer Model

4.1 Computation Time

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

4.2 Cost

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

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

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

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

5 Evaluation

use benchmark data to evaluate model.

6 Related Work

7 Conclusion

Reference