ANCHOR: A VERSATILE AND EFFICIENT FRAMEWORK FOR RESOURCE MANAGEMENT IN THE CLOUD

Abstract:

We present Anchor, a general resource management architecture that uses the stable matching framework to decouple policies from mechanisms when mapping virtual machines to physical servers. In Anchor, clients and operators are able to express a variety of distinct resource management policies as they deem fit, and these policies are captured as preferences in the stable matching framework. The highlight of Anchor is a new many-to-one stable matching theory that efficiently matches VMs with heterogeneous resource needs to servers, using both offline and online algorithms. Our theoretical analyses show the convergence and optimality of the algorithm. Our experiments with a prototype implementation on a 20-node server cluster, as well as large-scale simulations based on real-world workload traces, demonstrate that the architecture is able to realize a diverse set of policy objectives with good performance and practicality.

Existing system:

On cloud resource management develop solutions for specific scenarios and purposes, such as consolidation based on CPU usage energy consumption bandwidth multiplexing, and storage dependences. Moreover these solutions are developed for the operator without considering the interest of clients.

Disadvantages:

Cloud resource management consolidation based on CPU usage energy consumption bandwidth multiplexing, and storage dependences. Moreover these solutions are developed for the operator without considering the interest of clients.

Proposed system: A revised DA algorithm that is guaranteed to find a weekly stable matching for a given problem. We then showcased the versatility of the preferences abstraction for wide spectrum of resource management policies for VM placement with simple API.
Advantages:

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Software requirements:

- Operating system: Windows XP
- Coding Language: Java (RMI, Swings, Awt, Networking)
- Mobile Coding: J2ME
- Wireless Toolkit: Sun WTK 2.5.1
- Data Base: MS Access
- IDE: Eclipse (Galileo)
- Simulator: Cloud Sim 3.03

Hardware requirements:

- System: Pentium IV 2.4 GHz or Latest
- Hard Disk: 40 GB
- Floppy Drive: 1.44 Mb
- Monitor: 14’ Color Monitor
- Mouse: Optical Mouse
- Ram: 512 Mb
- Keyboard: 101 Keyboard.

Conclusion:

Anchor is a unifying fabric for resource management in the cloud, where policies are decoupled from the management mechanisms by the stable matching framework. Then efficiency and scalability of Anchor are demonstrated using a prototype implementation and large scale trace-driven simulations.