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RESOURCE PROVISIONING FOR ENSURING QOS IN VIRTUALIZED ENVIRONMENTS

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ABSTRACT

When the workload of a service increases rapidly, existing approaches cannot react to the rising performance requirement. To efficiently because of either inaccuracy of adaptation decisions or the slow process of adjustments, both of which may result insufficient resource provisioning. The main concept of this paper is ability to add or remove the cloud resource provisioning. To improve the Quality of Service in the resource management. Resource management policies and objective separately in each jobs. Large scale problems are handled In online scheduling the decisions regarding how to schedule tasks are done during the runtime of the system. The scheduling decisions are based on the tasks priorities which are either assigned dynamically or statically. Static priority ambitious algorithms allocate preset priorities to the tasks by the start of the system. Dynamic priority driven algorithms assign the priorities to tasks during runtime. An online algorithm is forced to make decisions that may later turn out not to be optimal, and the study of online algorithms has focused on the quality of decision-making that is possible in this setting. Online resource placement develops systems to predict the dynamic resource demand of resources and guide the placement process considers minimizing the long-term routing cost between resources.

KEYWORDS: Big Data, scientific workflows, cloud computing, geographically distributed, data management

INTRODUCTION

To enable this Big Data processing, cloud providers have set up multiple datacenters at different geographical locations. In this context, sharing, disseminating and analyzing the data sets results in frequent large-scale data movements across widely distributed sites. The targeted applications are compute intensive, for which moving the processing close to data is rather expensive (e.g., genome mapping, physics simulations), or simply needing large-scale end-to-end data movements (e.g., organizations operating several datacenters and running regular backup and replication between sites, applications collecting data from remote sensors, etc.). In all cases, the cost savings (mainly computation-related) should offset the significant inter-site distance (network costs). Studies show that the inter-datacenter traffic is expected to triple in the following years. Yet, the existing cloud data management services typically lack mechanisms for dynamically coordinating transfers among different datacenters in order to achieve reasonable QoS levels and optimize the cost-performance. Being able to effectively use the underlying storage and network resources has thus become critical for wide-area data movements as well as for federated cloud settings.

This geographical distribution of computation becomes increasingly important for scientific discovery. In fact, many Big Data scientific workloads enable nowadays the partitioning of their input data. This allows to perform most of the processing independently on the data partitions across different sites and then to aggregate the results in a final phase. In some of the largest scenarios, the data sets are already partitioned for storage across multiple sites, which simplify the task of preparing and launching a geographical-distributed processing. Among the notorious examples we recall the 40 PB/year data that is being generated by the CERN LHC. The volume overpasses single site or single institution capacity to store or process, requiring an infrastructure that spans over multiple sites. This was the case for the Higgs boson discovery, for which the processing was extended to the Google cloud infrastructure.

Accelerating the process of understanding data by partitioning the computation across sites has proven effective also in other areas such as solving bio-informatics problems. Such workloads typically involve a huge number of statistical tests for asserting potential significant region of interests (e.g., links between brain regions and genes). This processing has proven to benefit greatly from a distribution across sites. Besides the need for additional compute resources, applications have to comply with several cloud providers requirements, which force them to be deployed on geographically distributed sites.

RELATED WORKS

In [1] Hugo Hiden, Simon Woodman, Paul Watson, Jacek Cala et al presents This project describes the e-Science Central (e-SC) cloud data processing system and its application to a number e-Science projects. e-SC provides both Software and Platform as a Service (SaaS/PaaS) for scientific data management, analysis and collaboration. It is a portable system and can be deployed on both private (e.g. Eucalyptus) and public clouds (Amazon AWS and Microsoft Windows Azure). The SaaS submission allows scientists to upload data, revise and scuttle workflows and split results in the cloud using only a web browser. It is underpinned by a scalable cloud platform consisting of a set of components designed to support the needs of scientists. The platform is exposed to developers so that they can easily upload their own analysis services into the system and make these available to other users

In [2] Radu Tudoran, Alexandru Costan, Rui Wang, Luc Boug_e, Gabriel Antoniu et al presents Today's continuously growing cloud infrastructures provide support for processing ever increasing amounts of scientific data. Cloud resources for computation and storage are spread among globally distributed datacenters. Thus, to leverage the full computation power of the clouds, global data processing across multiple sites has to be fully enabled. However, managing data across geographically distributed datacenters is not trivial as it involves high and variable latencies among sites which come at a high monetary cost. In this work, we propose a uniform data management system for scientific applications running across geographically distributed sites. Our solution is environment aware, as it monitors and models the global cloud infrastructure, and offers predictable data handling performance for transfer cost and time

In [3] Tevfik Kosar, Engin Arslan, Brandon Ross, and Bing Zhang et al presents Wide-area relocate of great data sets is unmoving a big brave despite the operation of high-bandwidth networks with speeds reaching 100 Gbps. Most users fail to obtain even a fraction of theoretical speeds promised by these networks. Effective usage of the available network capacity has become increasingly important for wide-area data movement. We have residential a\data transfer scheduling and optimization system as a Cloud-hosted service", Stork Cloud, which will alleviate the large-scale end-to-end data group blockage by efficiently utilizing fundamental networks and effectively scheduling and optimizing data transfers.

In [4] Nikolaos Laoutaris, Michael Sirivianos, Xiaoyuan Yang, and Pablo Rodriguez et al presents Large datacenter operators with sites at numerous locations measurement their input resources according to the peak stipulate of the geographic area that each site covers. The insist of specific areas follows strong diurnal patterns with high peak to gorge ratios that result in poor average utilization across a day. In this paper, we prove how to rescue unutilized bandwidth crosswise numerous datacenters and backbone networks and use it for non-real-time applications, such as backups, propagation of bulky updates, and migration of data. Achieving the above is non-trivial since leftover band- width appears at different times, for different durations, and at dissimilar places in the world.

In [5] Costin Raiciu, Christopher Pluntke, Sebastien Barre et al presents Recently novel data center topologies have been proposed that present senior collective bandwidth and site independence by creating multiple paths in the core of the network. To effectively use this bandwidth requires ensuring different flows take different paths, which poses a challenge. Plainly put, there is a divergence among single-path transport and the multitude of available network paths. We propose a natural evolution of data center transport from TCP to multipath TCP. We demonstrate that multipath TCP can effectively and seamlessly use available bandwidth, providing improved throughput and better fairness in these new topologies when compared to single path TCP and randomized flow-level load balancing.

PROPOSED SYSTEM

A uniform statistics management system for scientific workflows operation crosswise organically distributed sites, aiming to produce monetary benefits from this geo-diversity. Our solution is environment-aware, as it monitors and models the global cloud infrastructure, offering high and predictable data handling performance for transfer cost and time, within and across sites. Overflow proposes a locate of pluggable services, grouped in an information scientist cloud kit. They provide the applications with the possibility to monitor the underlying infrastructure, to exploit smart

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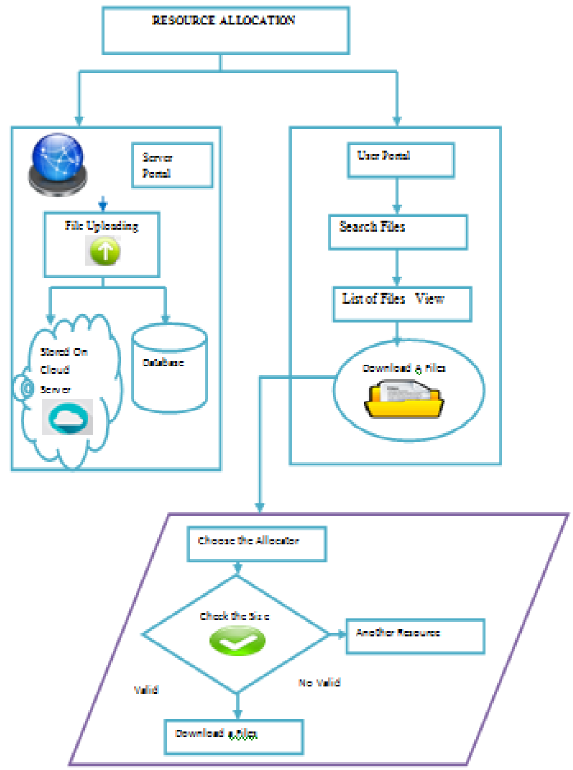
data compression, deduplication and geo-replication, to evaluate data management costs, to set a tradeoff between money and time, and optimize the transfer strategy accordingly. The system was validated on the Microsoft azure cloud across its 6 eu and us datacenters.

ARCHITECTURE DIAGRAM



MODULES

- Management process
- Secure key generation
- Client process
- Resource provisioning

MODULE DESCRIPTION

MANAGEMENT PROCESS

Management process is a procedure of scenery goals, planning and/or scheming the organizing and leading the execution of any type of activity, such as: a project (project management process) or. a process (process management process, sometimes referred to as the process performance measurement and management system).

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In the admin module they are various purposed to be done

i) UPLOAD FILES TO SERVER

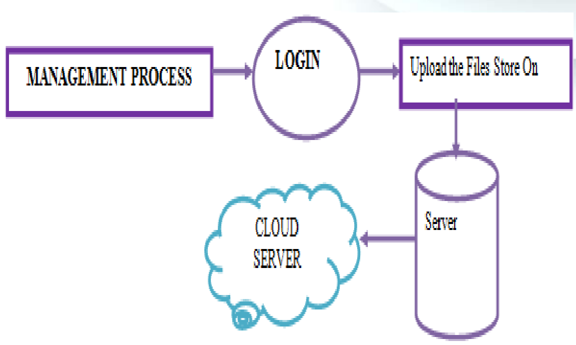
The problem scales up, VMs are allocated to lower ranked servers and their happiness decreases, and servers are allocated with higher ranked VMs, due to the increased competition among VMs. Also note that Multistage DA is only able to improve the matching. In the upload a file in the cloud the admin can process the files.

ii) VIEW FILES

In the admin uploading and the user downloading the files, the admin are going to upload file between them. They can share the uploaded files. User for download files. System showed very good Performance in terms of speed, accuracy, and ease of use. The downloaded files can be automatically stored.

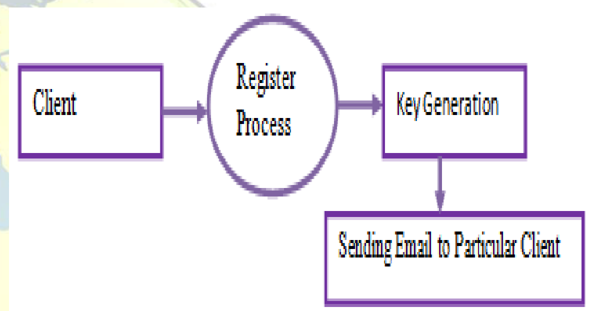
iii) DOWNLOAD A FILE (FILE RETRIVEL ACCUARCY)

The user can download a file details can be viewed by the admin



SECURE KEY PROCESSING AND VERIFICATION

Secure Key Processing module generates the random keys to the users and send those keys to the user's respective mail, whenever the user get the key the system asks for the submission of those keys. After submitting the key to the system it checks the identities of the users whether they are authorized user or not.



CLIENT PROCESS

i) SEARCH A FILE

The Admin Process can upload a file, the user can search the files .Based on User requirements the admin can upload the files the user can search the files from the admin upload the files,

ii) DOWNLOAD

The search time includes fetching the posting list in the index, ordering each entries. Our focus is on top-k retrieval. As the, server can process the top-k retrieval almost as fast as in the plaintext domain. Note that the server does not have to traverse every posting list for each given trapdoor, but instead uses a tree-based data structure to fetch the corresponding list.

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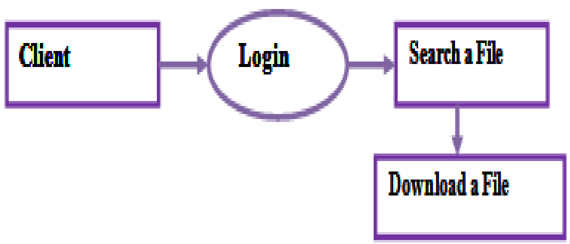
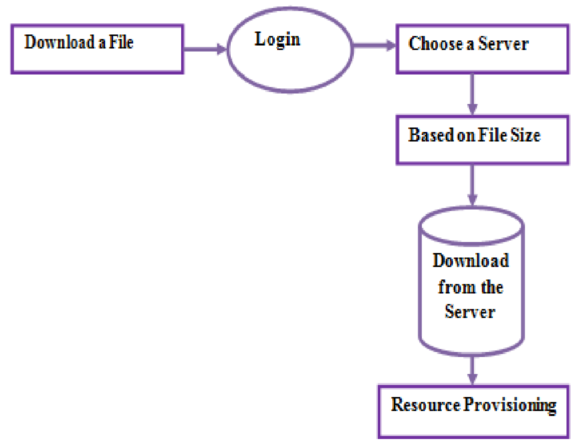
Therefore, the overall search time cost is almost as efficient as on data.

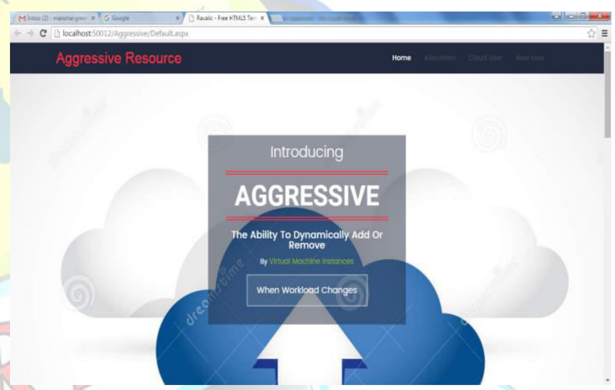




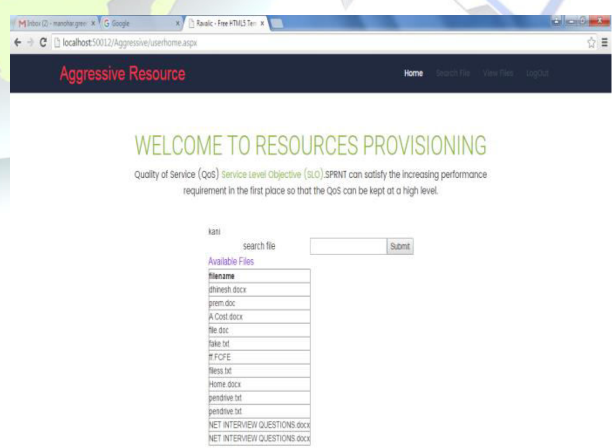
RESOURCE PROVISIONING

A destructive resource provisioning approach which encourages SPRNT to significantly augment the preserve allocation in each version cycle when workload increases. These approach first provisions resources which are possibly more than actual demands, and then reduces the over-provisioned resources if needed this paper proposes SPRNT, a system that dynamically adjusting the number of virtual machine (VM) instances to ensure the QoS by accelerating the resource provisioning in virtualized cloud computing environments. The key idea behind SPRNT is exploiting an aggressive strategy, which likely provisions resources that may exceed the actual needs, satisfies the performance requirement at the very beginning of the adaptation process, and then decreases the over provisioned resources if needed. The amount of the resources to be allocated is determined during runtime according to the workload intensity and the amount of provisioned resources rather than a fixed number.

OUTPUT RESULT



CLIENT HOME



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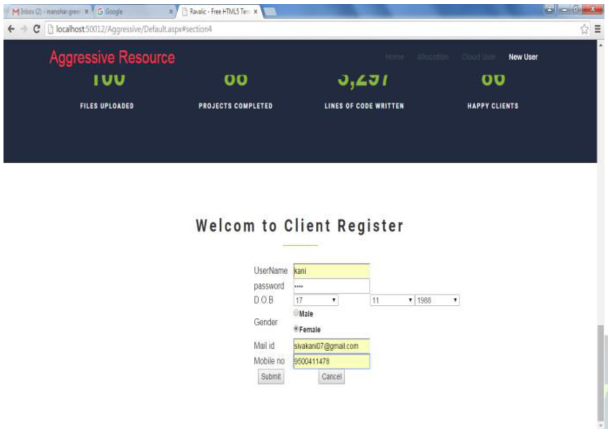
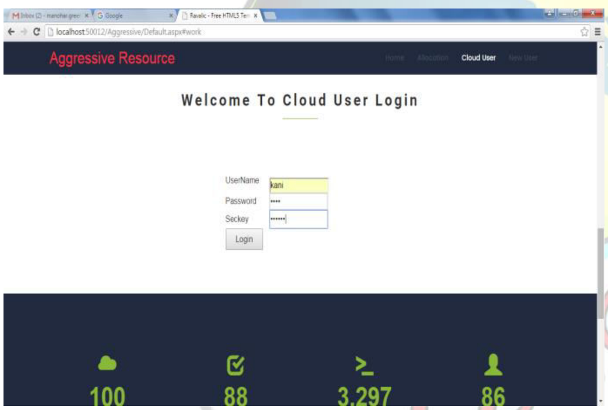
CLIENT REGISTER



CLIENT LOGIN



CONCLUTION

This project introduces Overflow, a statistics management structure for systematic workflows running in great, geographically distributed and highly dynamic environments. Our system is able to effectively use the high-speed networks connecting the cloud datacenters through optimized protocol tuning and bottleneck avoidance, while remaining non-intrusive and easy to deploy. Currently, Overflow is used in production on the Azure Cloud, as a data management backend for the Microsoft Generic Worker workflow engine.

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