Cloud Automation and Scalable Applications

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ABSTRACT
In this study we confer an idea of implementing scalable applications and their procedure of deployment.

Cloud computing uses internet and central remote servers to preserve information and applications. Cloud computing lets clients and business to use applications with no installation and right to use their private data at any node with internet access. This tool provides more efficient computing by centralizing storage, memory, processing and bandwidth.

Cloud computing provider convey applications by means of the internet, which are accessed from web browsers, desktop and mobile apps, while the commerce software and information are stored on servers at a distant location. Many applications that until now have been prevalent in thin client Windows computing are delivered via screen-sharing tools. The computing resources are located at a isolated data-center location. In most cases, entire business applications have been coded using web-based technologies.

Cloud computing consists of services delivered by shared data-centers and working as a sole point of access for clients requirements. Business contributions are required to meet service-level agreements (SLAs), but few terms mostly negotiated by small industries.

Keywords
Cloud computing, Scalable applications, SLA's, Cloud Automation.

1. INTRODUCTION

1.1 What are characteristics of Cloud computing?
Cloud computing provides the following important characteristics:

Dependability - is improved if multiple redundant sites are used, which makes well-designed cloud computing suitable for business continuity and disaster recovery.

Scalability and Elasticity by on-demand service of resources on a deep, self-service source close to real-time, with no users having to fix for zenith loads.

Performance - is monitored, and reliable and loosely coupled architectures are created using web services as the system interface.

Safety measures could get better due to centralization of data, amplified security-focused assets, etc., but concerns can persevere about failure of control over certain susceptible information, and the deficiency of security for stored kernels. Safety is better than under conventional systems, in part because providers are able to dedicate assets to solving security issues that many clients cannot afford. Yet, the complication of security is greater than before when information is dispersed over a wider region or greater quantity of devices and in multiple systems that are being pooled by nonrelated users. Also, user entrance to security audit logs may be complicated. Confidential cloud installations are in fraction stimulated by users desire to keep hold of control over the communications and keep away from losing control of data security.

Preservation of cloud computing applications is simple, since they do not require to be installed on each client's computer.

1.2 Need of Automation
Cloud computing provides client the liberty to focus on their goals. As the service supplier, there are two main techniques for giving them with this liberty: generalization and automation. Generalization or abstraction is the procedure of hiding the facts of the execution from clients to focus on service release. Automation occurs when service requirements, selected by the clients from the service catalog, are involuntarily transformed into the difficult tasks required to attain the end result.

Automation is a dominant driver for cloud computing. When done accurately it lets end users switch tasks before handled by IT staff, leaving IT to do what it does best handle the important tasks, leaving the assets portal as an mechanized, organized, self-service machine.

Workload redeployment is about being able to move an existing procedure from one cloud to another in a flawless and comparatively quick set of steps. It depends on interoperability, but it goes ahead of that with a set of tools to enable clients to shift their workloads to the cloud environment that makes the most logic for economic, performance or other reasons. Tools are being implemented to sustain this. Scaling and monitoring automation for clouds is more established. Hewlett-Packard and IBM have also added cloud monitoring to their systems administration suites.

The cloud automation liberty is likely to be very motivating for the probable future, and based on the remarks of OSCON attendees, the claim is authentic.

The automation machine could be fed IT model information and monitoring feeds straight from the cloud manager and could thus contract with the ever altering environment and keep the application automation policy up to date with the cloud mechanism currently in use.

1.3 Process of Automation
Composite clouds must be handled with automation.

Many companies end up with more than a few types of clouds when they surround out their final enterprise cloud computing solution. This classically means a few types of private clouds, a few types of public clouds, and perhaps other development and configuration management systems. As a result these

compound, deployments are now more the regulation than the exception.

There are two basic ways to handle such compound cloud platforms, such for provisioning and deprovisioning storage and compute.

First, you can run these cloud assets using the local interfaces and consoles presented by the cloud providers. Considering this way means you deal with the complication of your cloud deployment head-on. This approach won't scale, and it won't be operationally effective over the long term. There are too many moving parts to regard as, and clients must manage the problems without the benefit of automation.

Second, you can eliminate yourself from having to deal with these complicated interfaces through the use of a cloud management platform (CMP), such as those offered by Hewlett-Packard, Rightscale, ServiceMesh, Dell, BMC, and Cisco Systems. CMP approach means that:

You place concept layer between yourself and the many different interfaces into the public and private clouds, as well as other automation forces such as Puppet and Chef.

You mechanize the use of those assets via policy-based approaches that can work with many back-end cloud-based technologies as a single, combined system. Hence, you can more easily provision across many types of clouds to manage diverse data systems. Possibly you will use one cloud for computation, another for data, and yet another for storage.

The skill of the CMP approach to place these assets behind a single pane of glass allows you to place complication into a single field with good automation and good controls. This approach trumps the approach of just dealing with the local interfaces, which quickly reaches the tipping point of over complication and mess nature. [1]

A large dispersed environment consists of few thousands of servers with varying software (system and application) and hardware combinations. It is essential to keep all infrastructure aligned to an organization's goal. Usually an IT team is expected to manage whole set of the infrastructure. This is achievable manually in case number of servers is in the range of tens. However efforts grow exponentially as the figure rises to hundreds and becomes almost an impossible task in case the figure goes in thousands. Few of the challenges as faced by IT team in such an environment are:

1. Making sure that new systems are made available in the shortest possible time.
2. All the systems deployed are aligned to company standards and specifications.
3. Maintaining track of IT infrastructure in the environment.
4. Making sure that the system deployed are always available and if there are any issues the right technicians are notified so that the problem is resolved at the earliest.

We all know business thrives when IT runs smarter, faster, and stronger. The only pragmatic solution is automating above tasks for a large distributed environment. This project aims at providing a solution to automate system maintenance tasks. Various tool sets are available in the market today for such a task. One of the most popular tools set is by BMC Software's.

We aim to provide a strategy and hence solution for managing automatically, through tools set, a cloud computing environment consisting thousands of servers.

Tools in scope:

1. BMC Bladelogic for server- BMC BladeLogic Server Automation lets IT organizations automate the management of enterprise-class data centers.
2. BMC Bladelogic for Database- BMC BladeLogic Database Automation is a comprehensive software solution that improves the efficiency of complex database infrastructures.
3. BMC Atrium Discovery and Dependency Mapping- Automates the process of populating the BMC atrium configuration management database(BMC atrium CMDB) by exploring IT systems to identify hardware & software & then creating configuration items (CI's) & relationship from the discovered data.
4. BMC ProactiveNet Performance Management– BPPM combines event management and data analytics in a single seamless solution. It provides solution for proactive detection and resolution of IT problems before they have an critical impact.
5. BMC Atrium Orchestrator- BMC Atrium Orchestrator is an IT process automation platform that automates tasks across multiple functional areas, systems, and geographical locations.
6. BMC IT Service Management.-BMC Remedy IT Service Management Suite (BMC Remedy ITSM Suite) provides out of-the-box IT Information Library (ITIL) service support functionality.[2]

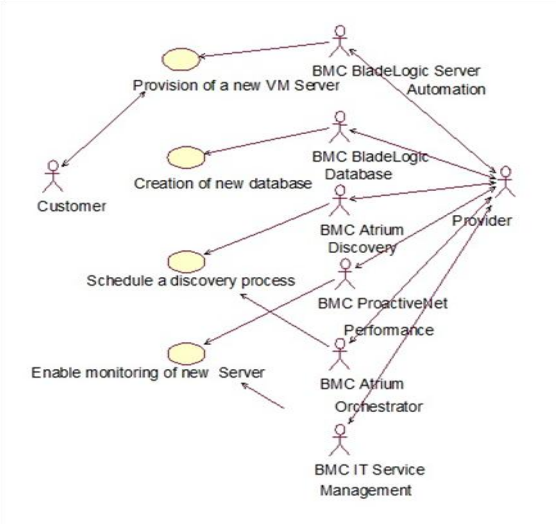

Fig 1: Diagram for BMC tools Automation Project

1.4 Scalable Applications

Scalability is the capability of a system, network, or process to handle a rising quantity of work in a competent manner or its ability to be enlarged to accommodate that expansion. [3]

A scalable online transaction processing system or database management system is one that can be upgraded to process more transactions by adding new processors, devices and storage, and which can be upgraded easily and transparently without shutting it down.

An example is a search engine that must scale not only for the number of users but for the number of objects it indexes.

A large many web applications are created to match the scalability need of the growing traffic.

The applications like LinkedIn, Facebook, Google and yahoo applications are all scalable applications.

The applications using these applications as their input and output source also become scalable applications. A lot of research is being done to use many applications on internet. Few applications like JStock use google and yahoo stock API which use the Google and Yahoo servers are scalable and meant to serve the increased load .So using such application as a framework and trying various algorithms can act as a good tool for the analysis of research algorithms. Such an attempt has been made for analysis of Fragmentation Algorithm using Jstock Framework which by default will become a scalable web application.[4]

The algorithm approach is consisting of two stages. First we will study the JStock software. Then we will build a JStock framework which will extract the Stock Data. We will then apply Fragmentation mining algorithm. Then we will analyze the results. Flow diagram shown in fig 2[4].

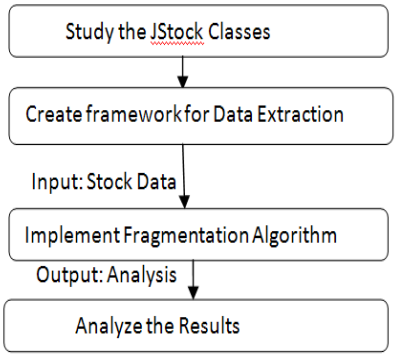

Fig.2: Implementation flow

1.5 Conclusion:

Cloud Computing is a by-product and consequence of the ease-of-access to remote computing sites provided by the Internet. This technology allows for much more inefficient computing by centralizing storage, memory, processing and bandwidth. Automation is a powerful driver for cloud computing. The cloud automation space is likely to be very interesting for the foreseeable future. Tools such as BMC Bladelogic Server Automation, BMC Atrium Orchestrator & BMC ProActiveNet Performance Management are used for automation.

We can easily create scalable web applications with the api provided by cloud giants like google and yahoo. It is very important to make the applications distributed and mostly cloud ready or deployable on internet.

1.6 Future scope

With internet booming so fast and It infrastructure growing so rapidly, developers should see that the applications are cloud deployable. Else otherwise they can use third party vendors like BMC to make their enterprise easily accessible online. So applications like JStock are futuristic applications where every common man can easily access the economical aspects like Stock market, business ideas & budget news etc.

Wide market is available in the form of Google play store, Apple store etc where the products can be launched for easy access through mobile phones too.

Jstock has an android version which is easily accessible through android mobiles. Also changes can be made to increase the productivity and efficiency of the application.

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