Contribution ID: **8**   Type: **Workshop**

Using a StratusLab Cloud Infrastructure

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Conclusions

The StratusLab project provides an open-source cloud distribution that can be installed by data centers to provide an IaaS platform for running its grid and non-grid services as well as providing a cloud computing service for its users.

The project provides incremental public betas approximately every six weeks. The current releases are nearly feature complete providing mechanisms for controlling computing, networking, and storage resources of virtual machine instances. The first production release will appear at the end of May 2012. The second year of the project will concentrate on advanced management services and facilitating sharing of resources through hybrid cloud infrastructures.

Overview

StratusLab develops and provides an open-source cloud distribution that allows data centers to expose their computing resources as an "Infrastructure as a Service" (IaaS) type cloud. Administrators can run their services over the cloud to improve availability, scalability, and maintainability of their grid and non-grid services. Virtual organizations and users can use the cloud to develop custom computing environments and domain-specific services.

This tutorial presents the main features of the current StratusLab distribution. Using the project's reference cloud infrastructure, participants will see how those features can be used by system administrators and scientists. The tutorial concludes with a presentation of the project's development roadmap and schedule of future releases.

Participants will be provided credentials for accessing the StratusLab reference cloud infrastructure. They must provide a laptop with python (2.6+), java (1.6+), and an ssh client installed.

Impact

Participants will learn about cloud technologies in general and will understand the distinction between Infrastructure as a Service (IaaS),

Platform as a Service (PaaS), and Software as a Service (SaaS) infrastructures.

They will understand how infrastructures based on the StratusLab distribution can be integrated with the European Grid Infrastructure and how the cloud services complement grid services.

Practical exercises will teach the participants how to launch virtual machines, customize their computing environment, share those customized environments with others, manage virtual disks, and define complete services.

Description of the work

Clouds based on the StratusLab distribution, like all IaaS clouds, allow users to configure and to control virtual machines remotely. Users can customize the computing, storage, and networking capabilities of their virtual machines.

The project, through a image repository, provides minimal virtual machine images based on common operating systems: CentOS, Ubuntu, and ttylinux. Users can deploy virtual machine instances based on those images while specifying the computing capabilities (CPU, memory, network, and storage) of the instance. They can also build their own images from scratch or from existing images to provide a customized computing environment and equally share those images through the image registry.

Three different types of network addresses can be allocated: public, local, and private. Public addresses allow users to deploy services accessible from the WAN. Local addresses allow direct communication between different machines within the same cloud infrastructure and are appropriate for applications which require communication between multiple workers, like MPI applications. Private addresses are appropriate for workers within master/slave systems that use a pull mechanism for retrieving tasks.

Data management services within the StratusLab distribution are based on virtual disks. Read-only virtual disks are managed and shared with the same tools as for virtual machine images. These can be used for making standard datasets or databases, for example, visible on a particular virtual machine instance. Read-write virtual disks can be used to store persistently service state, databases, and logs. These can be used only within a single cloud infrastructure and mounted by a single machine instance.

Advanced features that allow the deployment and automated control of complete services (e.g. a batch system) will be provided by the project and a preview of these will be a part of the tutorial.

URL

http://stratuslab.eu/

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