Best Project Groups Year 2015-16

Sr. No.	Name of Students	Project Title	Area	Sponsoring Company
1	TANNA SONALI SUBHASH T SWATHI SRI KIRAN YEOLE HARSHITA PRAKASH BORAWAKE PRIYANKA SANJAY	Integration Framework Component	Cloud	Persistent Systems Ltd.
2	DATE SHREYA DILIP JOSHI MAITHILEE PRABODH GUPTE AISHWARYA SANDEEP KSHIRSAGAR NEHA BHASKAR	Multi- Disk and Multi-NIC Support for VM and P2V migration	Cloud, Python, Libvirt, KVM	Persistent Systems Ltd.
3	DABADGE PRIYANKA SHIRISH DHYADE SHRADDHA DAIVKUMAR GHARDE JAISHREE RAMESH HARSHA VITHALRAO DESHMUKH	Constructing an optimizer generator using SpecDFA as the input specification language	Compiler Design and Construction	IIT Bombay
4	BORSE NIKITA KAILASH KHEDKAR GAURI JAYANT TEREDESAI SANNIDHI SHEKHAR VANJAPE AISHWARYA MANGESH	Towards support for container migration to public clouds and rollback mechanism for migration work flows	Cloud	Persistent Systems Ltd.
5	KAUSHIK CHETANA ARVIND PRIYANKA MISHRA YEWALEKAR RUTUJA VIDYADHAR BHANDARI TEJOL TEJKUMAR ARAS ASHWINI NITIN	Inter-cloud VM Migration from public cloud to public cloud and multi- subscription support	Cloud, Python, Boto library, Amazon, Azure	Persistent Systems Ltd.

Integration Framework Component

Abstract

In order to deal with the growing data, many organizations are availing cloud services for data storage. Salesforce is a platform which provides cloud services for developing SaaS (Software as a Service) applications. With the increasing interaction between application data and other applications, either within an enterprise or with external systems, there is a need to integrate these applications. An Intermediate integration system is essential to avoid data inconsistency, duplication and inaccuracy between these applications. The real problem in integrating these applications is that they have different interfaces that use different technologies, transport protocols and data formats.

This Integration Framework supports interoperability between these applications. It consists of different modules that enable an enterprise application in pushing data of number of business objects to an external system on Salesforce Cloud Platform. The framework accelerates this process by converting the data from native application format to the Salesforce data format. It supports multiple communication modes such as web services, HTTP and different data formats such as XML and JSON messages.

This Framework will help to consolidate data related to various transactions taking place across the different branches of inventories. The inventory application allows the customers to view the details about the products and place a purchase order. The products will be delivered from the nearest warehouse and the stock details are maintained by a centralized system.

Multi- Disk and Multi-NIC Support for VM and P2V migration

Abstract

Server virtualization is an integral part of the IT world.It al-lows multiple applications to share several hardware resources by introducing a layer called the Hypervisor.The benefits of virtualizing another system outweigh the risk of keeping one or more physical systems around.Also, the entire state of the vir- tual machine can be remotely mirrored and easily recovered in the event of a disaster.

Virtual machine disk file migration to a cloud enables cost-effective management of virtual machine disks as part of a tieredstorage strategy.This project intends to provide multi disk andmulti NIC support to the migrated virtual machines.It performsoffline migration of virtual machine disk files within and across storage arrays without service disruptions. The project thus
aims to achieve:
• Storage migrations with complete transaction integrity.
• Migration of the disk files of virtual machines running any
supported operating system on any cloud platform. The VM or physical machine can have multiple NICs. NIC teaming is done to keep all packets associated with a single TCP stream on a single NIC so as to minimize the possibility of out- of-order packet delivery. These virtual NICs should be migrated along with the Vms. After migration, the target cloud will thus have the migrated VM along with its disks and NICs.

Constructing an optimizer generator using SpecDFA as the input specification language

Abstract

A compiler is a program that accepts a source program as input and converts it into a target program which is semantically equivalent. Optimization is one of the most important phases of the compiler. Compiler optimization is a technique that converts a program into a semantically equivalent program that uses lesser resources than before by performing suitable analysis and transformations. ptimizer Generator is a tool which will read the specifications file and generate an optimizer based on the specification file. This tool will also allow users to experiment for creating new optimizations. Thus the aim of this project is to automate the generation of optimizers by designing an Optimizer Generator. The input to the optimizer generator would be given in input specification file and input to the generated optimizer would be the three address code.The optimizer thus generated by Optimizer Generator will be then integrated with the CFGLP tool. Previously the input specification file provided to the Optimizer generator was writ- ten using a rudimentary language. Now it is written using SpecDFA, a language more powerful than its predecessor. In order to construct analysers from specifica- tions, specifications should be declarative, must have orthogonal features and should not depend on a programming language.Thus SpecDFA is a strongly typed language that supports a rich set of orthogonal features. This tool finds its application at Institutional Level by students and faculty to un- derstand the optimization techniques easily by observing the intermediate steps and details displayed by it. It can also be used by the data flow analyzers to experiment with new optimization techniques.

Towards support for container migration to public clouds and rollback mechanism for migration work flows

Abstract

Virtual machines have been the core cloud virtualization con-struct providing the virtualized operating system.VMs are com-plete implementation of operating systems. Any OS running on a bare metal machine can run on the VM. On the other hand,
Containers a lightweight virtualization construct gives you a view or a slice of an OS already running. One can access OS constructs as if you were running an application directly on the OS. Application containers provide a level of abstraction, so
that users feel like they are running on a bare machine or a bare OS, using the application runtime of some kind. Containers require less memory and provide faster launching
and faster operations. They provide a standard way of format- ting the applications. These containers contain all the depen- dencies of the application running within it. Containers provide easy portability of applications as the dependencies need not be
handled explicitly. Once an application is hosted in a container it works in uniform manner on any host. There may occur a need of migrating these containerized appli-
cations in order to handle the issues like load balancing, disaster recovery etc. Hosting various applications in multiple containers on a single server, may load the system and hence for load bal- ancing, these containers need to be migrated. Another scenario
where critical applications are hosted on a server, and due to occurrence of some disaster, these applications may crash, thus creating a need to migrate these containerized applications. There are many containerization tools available today, and one of them is 'Docker'. Docker is an open source engine that au- tomates the deployment of applications into containers. Docker adds an application deployment engine on top of a vir- tualized container execution environment. Thus the project tries to enhance the usability of containers by facilitating efficient migration of Docker containers.

Inter-cloud VM Migration from public cloud to public cloud and multi-subscription support

Abstract

A major obstacle, that business enterprises face, when it comes to cloud ser-vices adoption, is the fear of getting locked in the vendor. Cloud Vendor Lock -in is the problem where customers using a product or service provided by thecloud vendor cannot easily transition from one cloud to another competitor because of incompatibility and proprietary issues. Inter Cloud VM Migration is a concept that enables migration of instances of 2a customer´s VMs from one cloud to another. It is a complicated process that delves into moving a virtual machine from the hypervisor environment of one cloud to the hypervisor environment (often incompatible) of another cloud. This step is a preliminary step to data and application migration.

There are several reasons like cost, QoS, etc. as to why a customer might want to migrate services from one cloud to another but there are several complexities associated with inter cloud migration because vendors are often nervous about customers changing suppliers making the transition a deliberate complex task. Customers, hence, get locked into the Cloud Vendor. Inter cloud VM migration chooses to solve this main issue in adopting cloud services. Key ideas We are required to develop a tool that provides for inter cloud VM migration from one public cloud to another. Multi subscription support can be added.