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Implementation of A Cross Platform Configuration Manager for Automating Various Tasks Involved in Wild fly Server

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ABSTRACT
Cloud computing has revolutionized the computing landscape by providing on demand, pay-as-you-go access to elastically scalable resources. Many applications are now being migrated from on-premises data centers to public clouds. The upcoming OASIS Topology and Orchestration Specification for Cloud Applications (TOSCA) standard provides new ways to enable portable automated deployment and management of composite applications. TOSCA describes the structure of composite applications as topologies containing their components and their relationships. Plans capture management tasks by orchestrating management operations exposed by the components. This chapter provides an overview on the concepts and usage of TOSCA. Our automated parallel approach makes the composite application deployment run in parallel when there are installation dependencies across multiple servers. We implemented a prototype system on Chef, a widely used automatic server installation framework, and evaluated the performance of our composite application deployment on a Soft Layer public cloud using two composite application server cases.
Keywords:- *Cloud Computing, TOSCA, OASIS Topology, Servers.*

INTRODUCTION

In the modern business environment, many organizations depend on IT to deliver always on systems and mission-critical services. But behind the scenes, IT organizations are coping with more and more complexity than ever before—complexity from growing data volumes, to composite applications, to virtualization and the cloud. Managing all these systems and services 24x7, in a global environment is one monumental challenge and constant battle for IT.

In recent years, cloud computing introduced a new way of using and offering IT software, platforms, and infrastructure services (Mell and Grance, 2009). The "utility-like" offering of these services and flexible "pay-per-use" pricing are similar to how resources such as electricity and water are offered today (Leymann, 2011): Applications and other IT resources such as compute and storage must not be bought upfront and managed by the enterprise on its own, but can be simply requested when the respective functionality is actually needed—without dealing with the complexity of management, configuration, and maintenance.

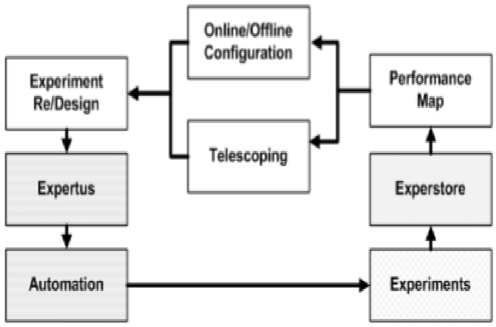


Fig 1: Approach to Large-scale Experiment Measurements

A composite application deployment approach invokes certain application scripts on the servers whenever they are deployed. There are applications that have installation dependencies across multiple servers. A Web application accessing a Web server and a database server is one of the typical examples. The Web application requires both the Web server and the database server, but the Web application installation should start after the installations of the other servers have been completed.

The effects of virtualization on response times, throughputs, and resource utilization, as well as the large number of resources provided, obfuscate predicting the performance of a virtualized service. Additional complexities come from the fact that cloud environments may combine multiple virtualization platforms that differ with regards to implementation and performance properties.

OVERVIEW ON TOSCA

TOSCA is an upcoming OASIS standard to describe composite (cloud) applications and their management. It provides a standardized, well-defined, portable, and modular exchange format for the structure of the application's components, the relationships among them, and their corresponding management functionalities.

The combination of the two TOSCA main concepts: (1) Application topologies and (2) management plans. Application topologies provide a structural description of the application, the components it consists of and the relationships among them. Each node is accompanied with a list of operations it offers to manage itself. .Management plans combine these management capabilities to create higher-level management tasks, which can then be executed fully automated to deploy, configure, manage, and operate the application.

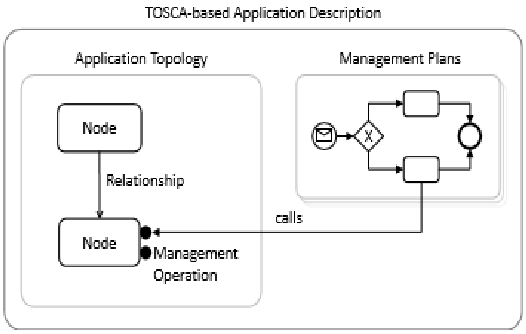
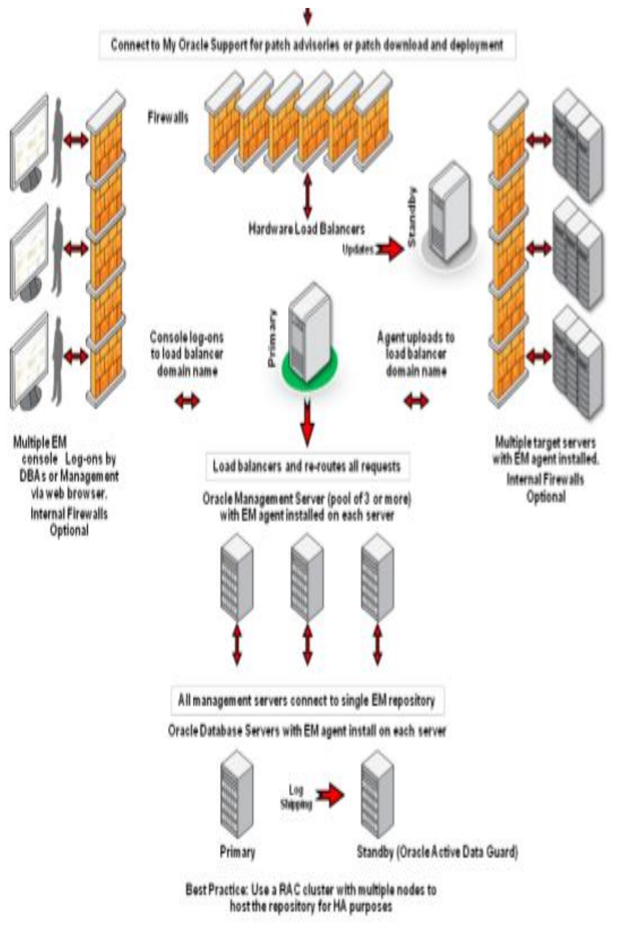


Fig 2: Relation of TOSCA Concepts

TOSCA aim stoenable the interoperability and reusability of application components such as Web servers, operating systems, virtual machines, and databases. These components are defined in a reusable manner by the developers, providers, or third parties together with their executable. Components of different providers do not stand on their own, as TOSCA enables combining them into new composite applications. Thus, TOSCA enables defining, building, and packaging the building blocks of an application in a completely self-contained manner.

ARCHITECTURE

Enterprise Manager being heavily used for the advanced tasks described in this white paper, performance scale-out could be more of a necessity on the management service level rather than the database level. In such scenarios, the Java Machine is where the bulk of the Oracle Enterprise Manager work is performed; and scalability would be desirable on the management services. On the other hand, housekeeping jobs in the Oracle Enterprise Manager repository are also a heavy burden, so scale-out on the database side using the Oracle Real Application Clusters (RAC) option may be required as well. a large scale Cloud Control deployment would involve thousands of targets across multiple servers and tiers. For this architecture, three or more load balanced management servers should be included. We could use for this purpose as an example; a hardware load balancer—like F5 Networks' BIG-IP Application Switch Load Balancer. This architecture, using hardware load balancers and multiple management servers, has proven to be extremely powerful. The concept sits well with Oracle's Grid/Cloud vision of enabling groups of hardware and software targets to be pooled and provisioned, on demand, to meet the needs of business. At its core, Cloud Control is the underlying management technology that makes it possible to manage, with ease, hundreds or even thousands of Grid/Cloud targets and/or services within any given environment. this simplifies the management of the disaster recovery site, because standby OMSs are no longer required to be manually updated following operations such as OMS patch applications, plug-in updates, or upgrades.



APPLICATION

The goal is to provide them in programming languages, which are widely supported by TOSCA containers. Due to the fact that Implementation Artifacts are bound to Node Types and Relationship Types, they are widely reused so it may be worth the effort to do multiple implementations. Management plans are tied to the actual application and, therefore, their level of reusability is lower than reusability for Implementation Artifacts.

Applications deployed in cloud platforms lead to a complex technology stack that influences the performance of applications. To enable reasonable performance analyses, the key performance-relevant properties of virtualization environments have to be identified; for example a detailed understanding of virtualization techniques and their effects on software performance is necessary. Heterogeneity and the dynamic nature of applications and work load running in a cloud introduce unpredictable resource usage and access patterns (e.g., network traffic, disk I/O).

CONCLUSION

TOSCA is a standard not providing any software and, therefore, requires an ecosystem. We gave a short overview on possible modeling tool support and runtime support. TOSCA packages may be distributed directly by a software vendor or available through dedicated marketplaces. the creation of standby databases can be streamlined, and how entire database systems and their underlying infrastructure can be automatically patched and provisioning with the newly integrated Oracle Enterprise Manager 12c and My Oracle Support (MOS).The Enterprise Manager Extensibility Exchange now offers a catalog of numerous Enterprise Manager Extensions, such as Plug-Ins and Management Connectors. And as we see the number of Oracle Enterprise Manager 12c management packs, management connectors and plug-ins steadily grow with capabilities. It would be also useful to combine with a virtual appliance approach for more rapid deployments, although this paper follows only the composite application approach.

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