How to Use a Tomcat Stack on vCloud® to Develop Optimized Web Applications
About Cloud Computing

Cloud computing is an approach to computing that pools or aggregates IT infrastructure resources. Using Infrastructure-as-a-Service (IaaS), through cloud computing, gives you a more efficient, flexible and cost-effective infrastructure. Clouds typically include a set of virtual machines ("VM"s). A virtual machine is an isolated software container that can run its own operating systems and applications as if it were a physical computer, and contains its own virtual (i.e., software-based) CPU, RAM, hard disk and network interface card (NIC). Users can start and stop Virtual Machines or use compute cycles, as needed. Clouds can be on-site (commonly referred to as ‘Private Clouds’), with a Service Provider (‘Public Cloud’), or a combination of the two (‘Hybrid Cloud’).

What is vCloud?

VMware vCloud is a software suite that empowers enterprises to transform their existing vSphere™ infrastructure into a consumable, self-managed, web-based service. It provides a window for end-user provisioning and deployment of servers, and enables enterprises to isolate departments IT deployments to provide unique quality of service requirements to each business unit. Organizations can maintain one or many shared catalogues, so business units can quickly and easily deploy custom servers on-the-fly without the need for further IT intervention. The VMware vCloud suite is built on top of vSphere, the industry standard in virtualization technology, and carries with it the enterprise-grade quality and features that you would expect from VMware.
The VMware Cloud Evaluation includes access to a host of VMware virtual appliances that leverage BitNami OS and application templates. This document focuses on getting started with Tomcat stack, a free, open-source, full-stack web application framework. Unlimited use of the Tomcat stack template is one of the many benefits of the VMware Cloud Evaluation.

**VMware Virtual Appliances**

VMware Virtual Appliances, or vApps, are pre-packaged software solutions comprised of one or more Virtual Machines containing all necessary functionality to be easily deployed in any VMware based infrastructure, such as VMware vSphere and VMware vCloud Director.

Packaged from the BitNami Stacks program, these Virtual Appliances contain all the components that the particular Open Source application requires. For example, the virtual appliance components may include Apache, MySQL, PHP or Ruby, as well as the Linux-based operating system they are configured to run in.

Optimized for cloud computing, vApps are portable, scalable and easy to deploy, making them the perfect fit to run in your VMware Cloud Evaluation environment.

Simply deploy the vApp in your VMware Cloud Evaluation instance and you’re ready to start configuring it to meet your needs. Each vApp can be customized, so please refer to the documentation for each vApp to make sure to go through all the necessary steps to setup and initialize your new Virtual Appliance.

**The Tomcat stack Template within the VMware Cloud Evaluation**

This document describes the process of deploying the Tomcat stack template within the VMware Cloud Evaluation.

Tomcat stack is a free and open source web server and servlet container. Tomcat stack implements the Java Servlet and the JavaServer Pages (JSP) specifications and provides a “pure Java” HTTP web server environment for Java code to run. Tomcat Stack greatly simplifies the development and deployment of Java applications. You can learn more about Tomcat stack at [en.wikipedia.org/wiki/Apache_Tomcat](http://en.wikipedia.org/wiki/Apache_Tomcat).

The Tomcat stack vApp is a ready-to-deploy virtual machine that contains all of the runtime dependencies to get up and running quickly with minimal setup. Tomcat stack vApp also includes ready-to-run versions of Apache, Tomcat, MySQL and Java. Built upon the Tomcat BitNami stack this vApp is distributed for free under the Apache 2.0 license.
VMware Ready vApps are built with a few goals in mind, including:

- Ease of deployment
- Independence, agility and portability across any VMware-based infrastructure
- Scalability to meet application growth as needed
- Ability to customize to configure the vApp to suit your needs

**Ease of Deployment**
VMware vApps make the process of deploying and installing a full Open Source solution incredibly easy, so you can be up and running in just a few clicks.

**Independent**
VMware vApps are completely self-contained, and as a result do not interfere with any software currently deployed in your vCloud environment simplifying deployment and easing concerns of conflicts.

**Portable**
VMware vApps can be migrated to new hosts, new vClouds, or exported and moved to an entirely new VMware based environment, meaning you can bring it with you when your needs change. Deploy internally to initially test, and then use VMware vCloud Connector to migrate the workload to your VMware Cloud Evaluation, or transfer it over to a full VMware Certified Public Cloud provider listed at vcloud.vmware.com/partners/vspp

**Scalable**
When your application has outgrown its current capacity, adding more resources is as easy as a few clicks. Designed for scalability, a vApp can have more RAM or CPU allocated to it whenever you choose.

**Customizable**
Since the VMware Cloud Evaluation uses templates built on popular Open Source applications, there is already a vibrant community of people who have contributed how-to guides, customization guides, themes, and add-on utilities to most of the applications the vCloud Service Evaluation offers. Everything from WordPress themes to Drupal modules are available for use and integration with your application.
Components & Requirements

Components
The Tomcat stack vApp ships with the following software versions running on Ubuntu 12.04:

- Apache 2.2.x
- Apache Tomcat 7.0.x
- MySQL 5.5.x
- Apache Ant 1.8.x
- Ant-Contrib 1.0b3

Requirements
The minimum requirements to install the Tomcat stack vApp are listed below. These minimum requirements are met when utilizing the “Standard” resource package within the VMware Cloud Evaluation.

- Intel x86 or compatible processor running ESX or ESXi
- Minimum of 512 MB of RAM dedicated to the vApp
- Minimum of 400 MB of Hard Disk space
- Valid Networking configured to the vApp
Installation

The Tomcat stack vApp is distributed as an Open Virtualization Format (OVF) package. Deploying this package is simple.

1. Login to your VMware Cloud Evaluation Console at vcloudservice.vmware.com
Installation

2. Select the “My Clouds” tab

3. Click the “Add a New Server” button
4. A popup form will appear with all of the field information needed to create the virtual machine. Enter the name of your server in the Server Label field and select the vApp you would like the server to reside in. You can create a new vApp by selecting “Create New vApp” and entering the name of the vApp.
5. Select the “Applications” Template
6. Select “Tomcat” from the next drop down list.
7. Use the slider to choose the amount of resource required.
Installation

8. Select “Add a New Hard Drive” and enter the amount of storage.
9. Check the boxes to assign your server an external IP address and allow traffic for the common incoming ports. These options can be configured or changed at a later time by going to the “View my Virtual Networks” sub-tab under My Cloud.
10. Click “Add New”

When your server is created it will be in a powered off state. To access your Tomcat stack vApp select the power button and browse to the external IP address listed in the server details.

Once installed, you can further customize the installation by using the vCloud Director interface. Please refer to Section 8 of the vCloud Director User Guide for information on using vCloud Director to work with a vApp. Please see vmware.com/go/vcd-userguide
Resources

Learn more about BitNami:
bitnami.org

To find additional VMware Ready Virtual Appliances, visit the VMware Solution Exchange:
solutionexchange.vmware.com/store