BMC Software Inc.

Technical Disclosure Publication Document

BSM Virtual Appliance Authoring Tool

Author

Vincent J. Kowalski

Posted: June 2011

Overview

Virtual appliances and the related Open Virtualization Format (OVF) standard are a powerful new means for delivering applications in a way that minimizes dependencies on a target machine. As powerful as this approach is, it is limited in that there is currently no way to describe and deliver, as a single package, a suite of virtual appliances that are tied together to form an integrated solution. This technical disclosure publication describes an invention that accomplishes this.

Background

What you can do

Using virtual appliance technology and the OVF standard, it is currently very feasible to deliver a given application in one vertical stack of technology as depicted in Figure 1 below. For example, if you have an application (such as a time-reporting system for large companies), you can deliver that as a virtual appliance where you would deliver the virtual machine, operating system, database, app server, web server, and application all in one package. You could then use OVF to describe this packaging.

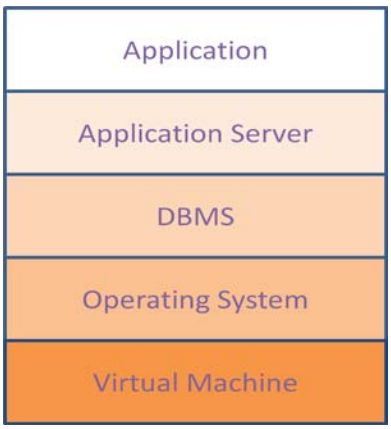

Figure 1. Virtual Appliance Vertical Stack

What you can't do

As powerful as the above-described use of virtual appliances and OVF is, there are some key limitations. For example, you would like to extend what you are delivering to be more than just time reporting, but an integrated suite of employee management tools, including payroll, benefits management, employee evaluation, and career management. Let's also say that each of these component applications has integrations with each other, but must (for reasons of runtime dependencies, and versioning, etc.) run its own virtual appliance. Such an integrated suite of applications is currently out of scope in the area of virtual appliance-authoring and OVF.

In general, integrated solutions are desirable to deliver to BSM customers. Such an integrated solution using virtual appliances is depicted in Figure 2. Again, this is currently beyond the reach of the current state of the art.

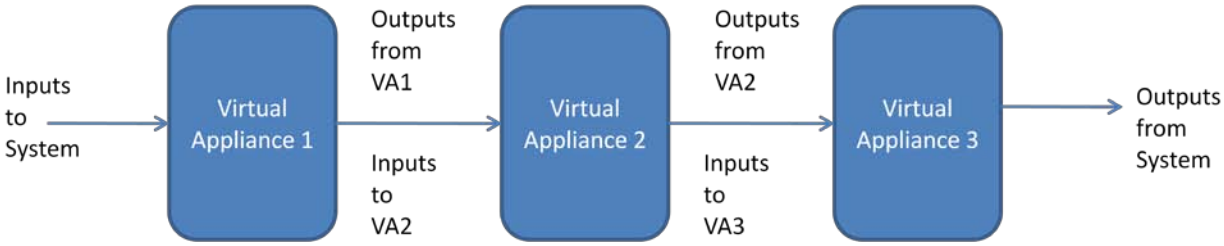

Figure 2. Integrated Solution with multiple Virtual Appliances

Problem

Currently, the following situation exists with virtual appliances and OVF.

A single OVF can represent any number of virtual machines (VMs), and any number of products/images within each VM. But, there is not a robust way to describe the dependencies between the VMs even when they are in one OVF package/file, except by virtue of being within the same OVF package/file, which would be considered an implicit dependency. Tooling with special knowledge may be able to specify parameters across products that would represent the dependency, but this requires extrinsic knowledge. There is no mechanism in the OVF standard to describe the dependency between a VM and an external app. There is no mechanism in the specification to describe dependencies across OVF files. Requirements and features to address these issues are sometimes referred to under the heading of *Composition*.

Unfortunately, this is the world BSM lives in. We need to have a virtual appliance authoring tool that allows for multiple component applications, with each potentially being delivered in its own virtual appliance, to be delivered as an integrated suite.

Solution

This invention is comprised of the following components:

- User Interface tool for selecting components to be included in the virtual appliance
  - Palette of these components
  - A graphical designer that allows the user to specify integrations

    - Both a graphical and import tool to specify the workflow aspects of the solution
- A solution builder that takes the specifications of the user and creates:
    - Virtual appliances for each of the components (that requires its own virtual appliance)
    - OVF file for each component
    - meta-OVF for the integrated solution
    - a download-able packaging of the above (as separate files or one zip file)
- Web delivery module that allows the download of that solution and easy installation

Given these components, a user can construct an integrated solution that is composed of individual virtual appliances that will interact with each other according to the specifications provided by the user and encoded in the meta-OVF file. The interaction of the user with the BSM virtual appliance authoring tool is shown in Figure 3 below.

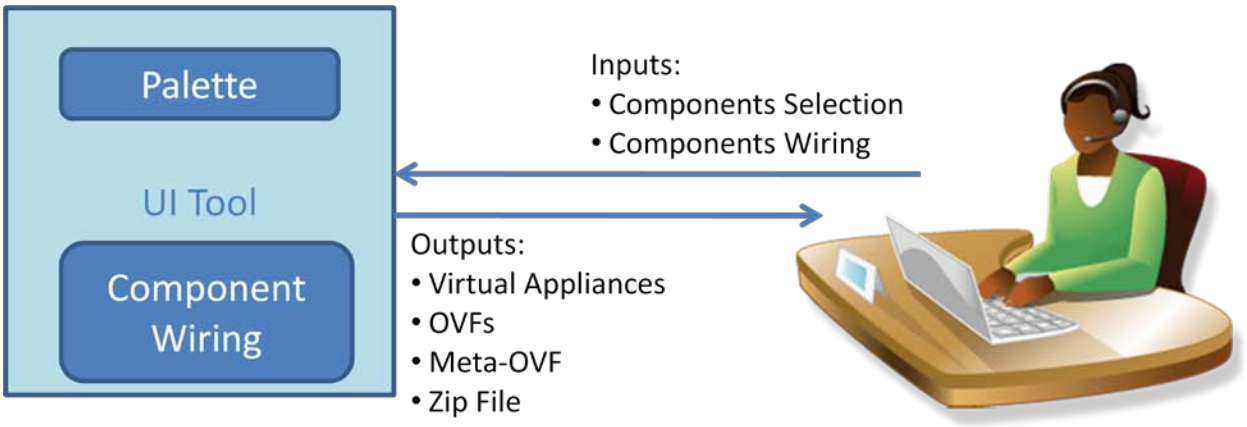

Figure 3. BSM Virtual Appliance Authoring