

Enabling Portability & Simplified Deployment of Virtual Appliances

Open Virtualization Format (OVF) - DMTF Standard for packaging and distributing virtual appliances

Introduction

Virtualization is rapidly transforming the information technology (IT) landscape and changing the way people compute. Many of today's powerful computer hardware were originally designed to run only a single operating system and often a single application. Virtualization breaks that bond, making it possible to run multiple operating systems/applications on the same computer at the same time – increasing hardware utilization and flexibility. The technology can benefit anyone using computing resources including desktops, laptops and servers.

The rapid adoption of virtual infrastructure highlights the need for a standard, portable metadata model for the distribution of virtual machines to and between virtualization platforms. To ease software deployment and reduce external dependencies on other services, such as the operating system(s), Independent Software Vendors (ISVs) can create a single pre-configured package that includes application components and associated operating system for their product. These ready-to-run certified applications packaged as virtual machines (VMs) are called *virtual appliances*. Virtual appliances enable easy transfer of software from an ISV through test, development, and into production.

Virtual Appliances

A virtual appliance is a pre-built software solution, comprised of one or more VMs that are packaged, maintained, updated and managed as a unit. By creating virtual appliances, software developers can ship pre-installed, pre-configured solutions that enable end-users to literally plug applications into their environments with minimal effort. IT organizations can also package standard

solution stacks, as well as custom-built software, into virtual appliances for immediate deployment of enterprise applications to remote and branch offices worldwide.

Deploying software as a virtual appliance makes it easy to install and manage. With virtual appliances, installing, configuring, and maintaining enterprise software is simplified, resulting in a better IT Administrative experience.

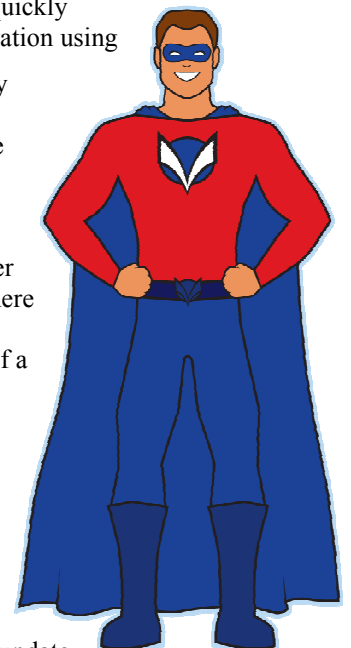
In order to make this concept practical on a large scale it is important that the industry adopts a vendor-neutral standard for the packaging of such VMs and the meta-data that are required to automatically and securely install and deploy the virtual appliance on any virtualization platform. The Distributed Management Task Force (DMTF) has introduced a packaging standard, Open Virtualization Format (OVF), to address the portability and deployment of virtual appliances.

Why is OVF important for Enterprises?

OVF enables simplified and error-free deployment of virtual appliances. Virtual appliance hardware requirements can be automatically validated during installation using OVF meta-data. Virtual appliances can be quickly deployed with pre-built configuration using

OVF meta-data and can be easily customized during installation. Multiple virtual machines can be packaged as a virtual appliance and deployed easily in a single OVF package. This simplifies deployment of complex multi-tier enterprise applications (where there is one or more VMs per-tier) as well as large scale deployment of a cluster of VMs in a cluster.

OVF meta-data can be extended to further simplify the management of VMs and lower costs. For example, OVF meta-data can be extended to include URL information that the virtual appliance can use to download the latest patches and update itself. Another example for OVF meta-data is to specify the security requirements for virtual appliance.



Also, virtual appliances packaged as OVF can state as a part of OVF meta-data it only accepts traffic on certain ports.

In addition, OVF meta-data can be used to capture the state of a virtual appliance based on the results of latest security scan to denote whether it is in a “clean” state or not.

Why is OVF important for ISVs?

OVF is a common packaging format for ISVs to package and securely distribute virtual appliances. This enables portability of virtual appliances across multiple virtualization platforms and products. OVF is a packaging standard and not a runtime standard. OVF supports packaging and distribution of any open virtual disk format or ISO format. By capturing configuration as a part of OVF meta-data, ISVs can make it easy to deploy and increase adoption of their virtual appliances.

DMTF standard for packaging and distributing virtual appliances

OVF is a platform-independent, extensible, open, packaging and distribution format for virtual appliances. OVF uses XML for capturing metadata about virtual appliance.

Figure 1 shows where OVF standards fits into a virtual appliance lifecycle.

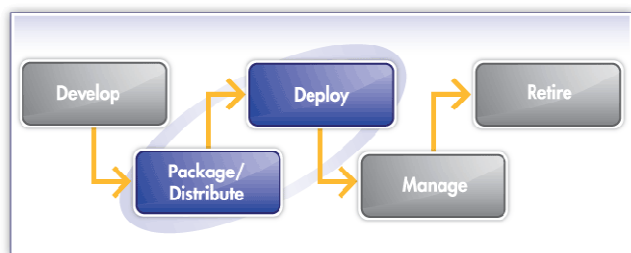


Figure 1: OVF version 1 scope in software lifecycle

By packaging virtual appliances in OVF independent software vendors can create a single pre-packaged appliance that can run on customers’ virtualization platforms of choice. OVF provides meta-data that can be used to simplify the installation and deployment process for customers. Customers also get greater flexibility by facilitating the mobility of virtual appliances across diverse virtualization platforms. The OVF XML file contains meta-data about VMs and includes multiple sections. These sections contain meta-data such as virtual disk, network, resource requirements (e.g., CPU and memory limits), licensing, product, VM startup sequence as well as configuration information about one or more virtual machines. OVF is extensible and enables the OVF package author/creator to include additional meta-data.

Key Features and Benefits

The Open Virtualization Format (OVF) describes an open, secure, portable, efficient and extensible format for the packaging and distribution of virtual appliances. The key features and benefits of the format are:

- **Portable VM packaging**
OVF is virtualization platform neutral, while also enabling platform-specific enhancements to be captured. It supports any open virtual hard disk formats. Virtual machine properties are captured concisely using OVF meta-data.
- **Optimized for secure distribution**
OVF supports content verification and integrity checking based on industry standard public key infrastructure, and provides a basic scheme for management of software licensing.
- **Simplified installation and deployment**
OVF streamlines the installation process. During installation, metadata in the OVF file can be used to validate the entire package and automatically determine whether the virtual appliance can be installed.
- **Supports both single VM and multi-VM configurations**
OVF supports both standard single VM virtual appliance and packages containing complex, multi-tier services consisting of multiple interdependent VMs.
- **Vendor and platform independent**
The OVF does not rely on the use of a specific host platform, virtualization platform, or guest operating system.

- **Extensible**
OVF is immediately useful – and extensible. It is designed to be extended as the industry moves forward with the virtual appliance technology. It also supports and permits the encoding of vendor specific meta-data to support specific vertical markets.
- **Localizable**
Supports user visible descriptions in multiple locales, and supports localization of the interactive processes during installation of a virtual appliance. This allows a single packaged virtual appliance to serve multiple market opportunities.

Conclusion

DMTF Open Virtualization Format (OVF) standard for packaging and distributing virtual appliances enables portability and simplifies installation and deployment of virtual appliances across multiple virtualization platforms.

More Information

For more information about OVF, please refer to www.dmtf.org/vman.

For more information about DMTF and details about its published standards, visit www.dmtf.org.

About DMTF

With more than 4,000 active participants representing 44 countries and nearly 200 organizations, the Distributed Management Task Force, Inc. (DMTF) is the industry organization leading the development, adoption and promotion of interoperable management standards and initiatives. DMTF management technologies are critical to enabling management interoperability among multi-vendor systems, tools, and solutions within the enterprise. By deploying solutions that support DMTF standards, IT managers can choose to deploy a mix of systems and solutions that best meet their users' needs, while reducing management complexity and total cost of ownership. Information about the DMTF technologies and activities can be found at www.dmtf.org.