

Parallels® Virtuozzo Containers

White Paper

Virtual Appliances: Improve Manageability & Automate Provisioning

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Version 2.0



Virtual Appliances

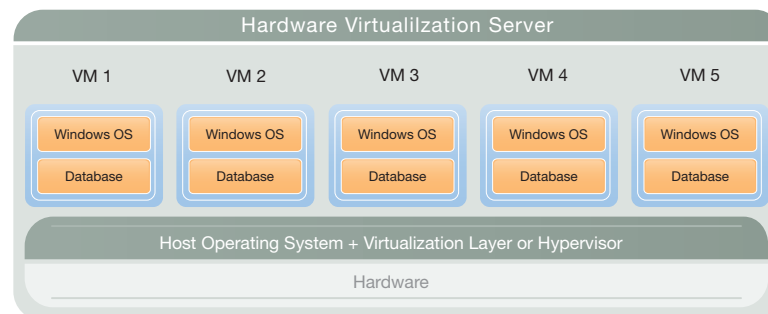
Recently, virtual appliances have been gaining notoriety with IT organizations. Virtual appliances are a pre-packed ready to deploy instance of an application or a set of applications created in a virtual machine or environment. On the surface, the idea is very attractive; the appliance is already configured and packaged to be quickly deployed on any server. For example, a DNS appliance would contain a pre-determined configuration for a virtual machine or environment and a loaded DNS instance.

Exciting and innovative? Well maybe, but this is similar to appliances in the 90's. Over 10 years ago, rack-based network and application appliances provided significant management savings compared to general-purpose stand-alone servers. However, they still had a lot of redundant hardware including separate power supplies, coolers, external I/O buses, etc. As a natural evolutionary step, blades introduced hardware infrastructure sharing in the 21st century, which drove management costs down significantly compared to rack-based servers.

VIRTUAL MACHINE VIRTUAL APPLIANCES

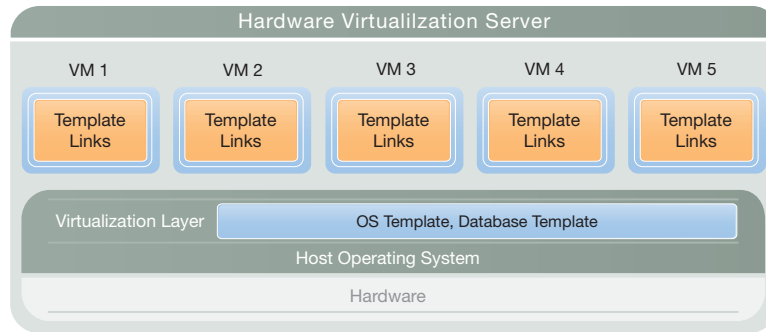
To date most virtual appliances have been deployed using hardware virtualization, a virtual machine or hypervisor technology. The process for creating a virtual machine virtual appliance is straightforward. For example, to create a DNS server the steps are to create an empty virtual machine, install the OS and required applications and then clone that complete environment. Subsequent DNS server deployments become very simple; it's just a single cloning activity.

Just like hardware appliances, virtual machines don't share the underlying infrastructure. To create five database server appliances, the software and any other required components need to be installed in each VM, creating five independently configured instances of the OS and applications. Five instances take five times longer to install, five times longer to patch and five times longer to start and stop for maintenance.



PARALLELS VIRTUOZZO CONTAINERS VIRTUAL APPLIANCES

Parallels Virtuozzo Containers avoids the problem of duplicating the infrastructure by maximizing the use of software resources through the use of templates. Instead of copying an OS and application into each virtual environment, Virtuozzo keeps a single, centrally installed master copy of the OS and applications. Instead of physical files, the virtual environment only holds copy-on-write links to the master image. In other words, Virtuozzo provisions the OS and applications by reference, not by value. In addition to the basic software replication enabled in a template, Virtuozzo has a configuration capability that allows multiple software templates and resource parameters to be pre-defined and easily replicated. The .NET example above becomes much simpler using Virtuozzo.



There is a single OS and database application on the server, with template links in each virtual environment.

Creating a Virtuozzo-based virtual appliance can be done through the simple process listed below:

- 1) Install the required OS and application templates on a Virtuozzo machine.
- 2) Create a new virtual environment sample configuration.
 - a) Select the sample configuration resource parameters including CPU, memory, etc. These parameters are the basic configuration parameters that can be changed in near real-time as necessary.
 - b) Select all of the relevant application templates to add to the configuration.

Once the sample configuration is created, administrators can create a new Virtuozzo machine appliance with a few selections, automating the process. Creating a new virtual environment with one of the sample configurations is the same as creating a virtual appliance... only better. The graphic below shows some configurations or potential virtual appliances built to support different applications including Oracle and SharePoint.

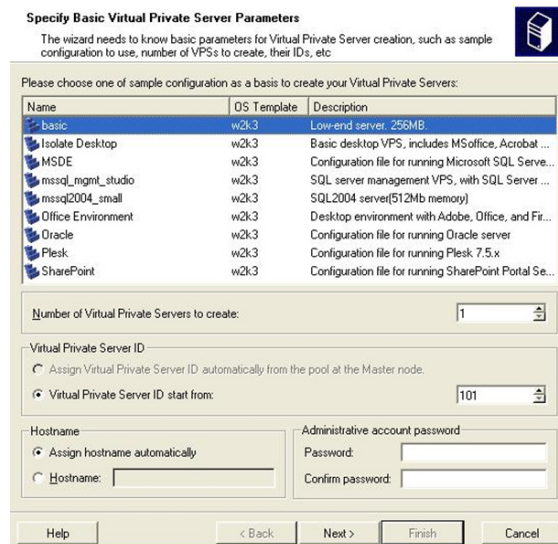


FIGURE 1: SAMPLE CONFIGURATIONS

PARALLELS VIRTUOZZO CONTAINERS VIRTUAL APPLIANCE BENEFITS

Virtuozzo virtual appliances are the most efficient deployment of virtual applications. Some considerations include:

- Parallels Virtuozzo Containers offers a much more efficient model for creating virtual appliances. The table below compares the two creation processes side by side.

Parallels Virtuozzo Containers Virtual Appliance		Virtual Machine Virtual Appliance	
CREATING THE INITIAL VIRTUAL APPLIANCE			
Process Step	Sample Time Estimate	Process Step	Sample Time Estimate
Load the OS and each required application	2 hours	Create an empty virtual machine	5 minutes
Load the OS template and create application templates	45 minutes	Load the OS and each required application in the virtual machine	2 hours
Create the sample configuration	5 minutes		
CREATE ADDITIONAL VIRTUAL APPLIANCES			
Create a new virtual environment using the appropriate same configuration	4 minutes	Clone the virtual machine	1.5 hours
CREATE 4 VIRTUAL APPLIANCES			
	16 minutes		6 hours

- Templates: with the templates, no matter how many virtual appliances are created, there is only a single instance of the OS and any associated application. The benefits for memory use, hard drive use, and obviously administrative management are much more compelling than any other type of virtual appliance.
- The cloning approach works, but it requires a standard copy of the original appliance sitting idle, with full software licensing, waiting to be cloned. Cloning is not an efficient approach to creating virtual appliances.
- Every administrative task is fast and efficient with Parallels Virtuozzo Containers
 - Provisioning: Virtual Environments can be provisioned in a matter of a few minutes depending on the applications
 - Backing up: Separating out the OS makes it very fast and efficient to keep a complete backup
 - Patching: Patch the template and deploy out to each instance in seconds
 - Migrating: Move to another physical server in seconds - the light footprint makes the transition fast
 - Starting/Stopping: Starting and stopping a virtual environment is very quick because the lengthy OS start-up process is not repeated.

Virtual appliances can be a great tool for any organization that deploys multiple same application servers with regularity. Virtuozzo virtual appliances are unique in architecture and deployment which enables a much better level of efficiency, manageability, resource use and flexibility.