What's New Document for Service Providers

Parallels® Virtuozzo Containers

www.parallels.com

Version 4.0

Introduction to Virtuozzo Containers

Parallels Virtuozzo Containers is the hosting industry's leading virtualization solution that affords service providers a wide variety of service and infrastructure offerings from which to choose. The container-based virtualization software dynamically partitions a single Linux or Windows operating system instance into highly efficient and scalable virtual containers. Virtuozzo includes patented technology that enables density of up to hundreds of virtual containers per physical server. Each virtual container has the same performance and functionality as a stand-alone server and can be managed with Plesk, third-party control panels or in-house systems. Virtuozzo Containers is the preferred virtualization tool for service providers because it is pre-integrated with Parallels Plesk Control Panel though Parallels' Open Platform initiative. Additionally, Virtuozzo serves as the virtualization layer within the Parallels Automation product and is an ideal platform from which to deliver SaaS offerings.

There are two main uses for Virtuozzo Containers by Service Providers:

1. To serve as the virtualization platform for a Service Provider's virtual infrastructure
2. To use as a revenue-generating offering within service plans

Using Virtuozzo Containers for Infrastructure Needs

OVERVIEW

Virtuozzo Containers is an ideal part of your hosting business' infrastructure. Virtuozzo comes bundled with Parallels Infrastructure Managert to allow hosting providers to provision, update, monitor and manage all of their virtual servers from one interface, regardless of the actual physical location of the virtual servers. With tools that handle physical-to-virtual and virtual-to-virtual migrations in minutes, system administrators are able to quickly and easily move virtual servers throughout the virtual infrastructure to perform maintenance, replace hardware, and avert any impending disasters without any required customer downtime. Providers also achieve time savings when Virtuozzo is installed on a dedicated server and data can be moved on or off the server using Virtuozzo migration tools and backup capabilities. Customers that run Virtuozzo on their dedicated servers eliminate the risk of hardware failure and ensure redundancy by virtualizing their infrastructure. The Virtuozzo Containers 4.0 release includes even more features to help provide a stable, high-performance virtual infrastructure.

ENHANCED CAPABILITIES FOR SERVICE PROVIDERS' VIRTUAL INFRASTRUCTURE

Virtuozzo Containers version 4.0 is the biggest release of the product to date . Highlights of the release include a new management toolset called Parallels Infrastructure Manager, and new user interface design to ensure that the product is easy to learn and use. The following provides a high-level view of new features and capabilities related to Virtuozzo's use in service providers' virtual infrastructure.

1. **Ease-of-Use and Manageability**
   Version 4.0 continues to make it faster and easier to benefit from using Parallels Virtuozzo Containers. Specifically:

   - Centralized update and template server: Virtuozzo 4.0 now includes functionality similar to SUS and installs a local patch server within each datacenter from which all nodes can receive automated Virtuozzo updates.

2. **Efficiency**

   Version 4.0's architectural enhancements provide higher levels of performance and stability while driving greater levels of efficiency through optimized system resource usage. Specifically:

   - Improved Parallels Virtuozzo Containers File System: Virtuozzo 4.0 now uses a more compact file system that is based on links to catalogs of files instead of links to the actual files. This makes setting up a VPS even faster while cutting down on the cost of disk space. The File System is now compatible with third party backup tools to allow you to choose how you want to perform backups.

3. **Parallels Infrastructure Manager (PIM)**

   Version 4.0 introduces Parallels Infrastructure Manager (PIM), a powerful web-based, centralized management interface tool, as part of the Parallels Virtuozzo Containers product. System administrators can efficiently manage their virtual infrastructures from anywhere at anytime. PIM includes multi-server and offline services management, as well as management of logging periods and open terminal access to hardware nodes. A rich new set of usability enhancements include dynamic container status/parameters update and dynamic update of resource usage by Container/Node. Additionally, the screen finder is integrated with global search. PIM specifically is:

   - **One toolset designed for the datacenter:** Hundreds of administrators can manage up to thousands of physical servers and tens of thousands of containers through one central point. PIM provides effective management through physical and logical views of the datacenter and offers role-based security so that you can delegate tasks to a multi-level sytem administrator workflow process.
   - **Open: easy to integrate and extend –** PIM is a virtual infrastructure management solution that provides support for industry standards such as SOAP, XML RPC, CLI, SNMP APIs and SDK as well as directory services such as LDAP and AD.

4. **Parallels Management Console (PMC) -** Previously known as the Virtuozzo Management Center (VZMC), PMC is the integrated management interface that now includes a simpli¬fied managed object navigation tree, multi-tabbed view for templates and User/Groups and Logs as well as the use of a lightweight SSH client for communications between PMC and Parallels Virtuozzo 3.x nodes. Administrators can also monitor and configure Service Con¬tainer from the PMC console.

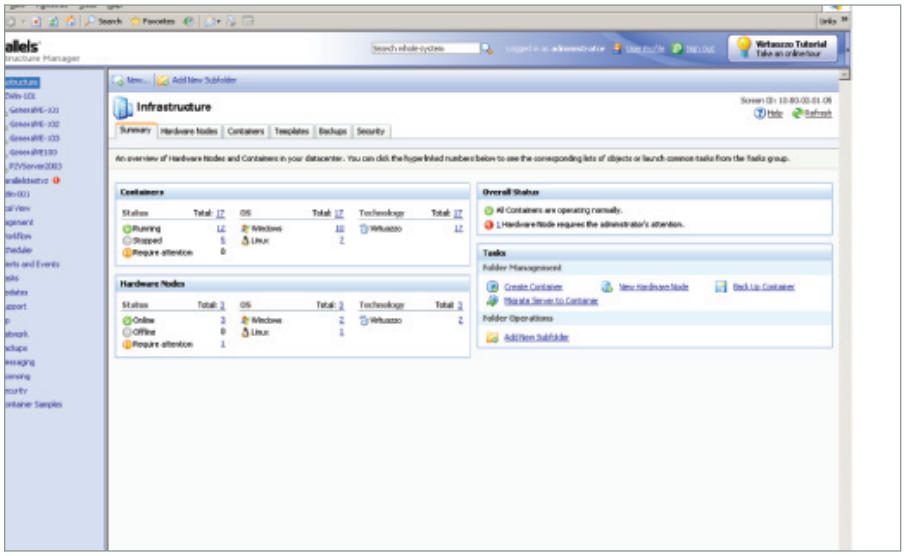

Figure 1 - PIM enables web-based, anywhere, anytime management.

5. **Centralized Multi-Server Management –** Version 4.0 introduces cross-server management and accessibility of templates, container samples and backups for easier management of Parallels Virtuozzo servers, containers and resources in large deployments.
6. **Complete Management Flexibility –** The two main interfaces have been designed to provide complete management flexibility.
    - **Organization –** Install servers and containers according to regular hardware infrastructure or create specialized logical organizations with departments or other designations. Organizations can be nested and titled with simple, easy-to-reference labels.
    - **Universal Management –** As servers and containers can be grouped logically or physically, tasks can be deployed universally across the groupings. Examples include installing an application to a group or deploying an update.
    - **Customization –** There are more than 20 choices for login customization. Users can select which screen to log into, administrators can log into the container provisioning screen and support personnel can log into the monitoring screen.
7. **Template Enhancements –** Create a centralized template repository, distribute them from one location and access them from Virtuozzo servers. Additional template enhancements include:
    - EZ Template download
    - EZ Template copy between servers
    - EZ Template removal
    - EZ Template cache with update, pre-fetch and status information
    - EZ Template proxy server
    - Container owner install
    - Review version
    - Update and status
8. **Improved Support for Multiple Ethernet Network Interfaces –** Version 4.0 includes the ability to manage multiple NICs from both the browser-based and GUI tools. The multiple NICs may be used to create redundancy with multiple connections to a single container, and they may be configured to different networks and VLANs to direct or control network traffic and access.
9. **Roles and Permissions Management –** An entire Parallels Virtuozzo Containers permissions module has been added. Virtuozzo-specific roles can be created. LDAP users can be imported into the permissions module, and the Virtuozzo permissions can be applied to the LDAP users. Permissions may be assigned to all levels of the management tool organization.

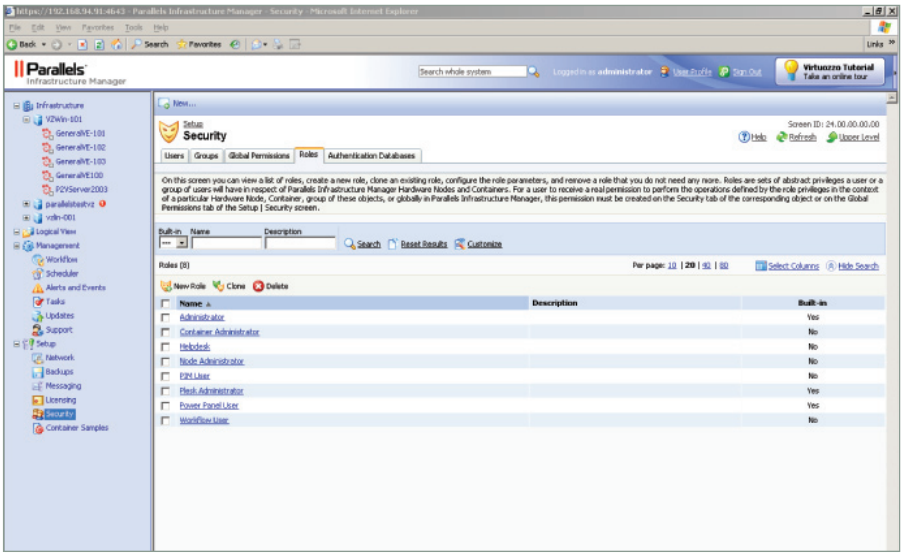

Figure 2 - Assign any user's roles and permissions with an easy-to-use interface.

10. **Plesk Key Save –** Plesk license keys are automatically restored on a container reinstall resulting in:

    - **Fast Management Enhancements –** Version 4.0 enables multiple container cloning and multiple container creation.
    - **Faster Connectivity –** New secure connection using its own transport encrypted by SSL enables faster operations.

TOP FEATURES OF VIRTUOZZO 4.0 FOR WINDOWS-BASED VIRTUAL INFRASTRUCTURE

1. **Accurate Windows Container File Footprint –** A container's size (hard drive space) is dependent on the data files in the container. This enhancement allows the file size to reflect the current contents of the container rather than the hard drive resource assignment. This new capability allows the container footprint to accurately reflect the size by immediately increasing or decreasing the container file size in near real time as data files change. The new footprint capability enables Parallels Virtuozzo Containers to have the highest level of resource efficiency without reconfiguring or reclaiming space.

2. **VSS Aware Online Snapshot –** Parallels Virtuozzo Containers backup uses Microsoft's Volume Shadow Copy Service's (VSS) capabilities to perform a reliable backup of applications such as Active Directory, Oracle and Microsoft SQL. This snapshot can be taken of any VSS compatible application without downtime or interruption in the application.

3. **Bandwidth Management –** Control, assign and monitor bandwidth usage between containers.

4. **Expanded Network Adapter Support –** Network adapters can now be managed more fully with: multiple NICs, mode management (bridged/routed) promiscuous mode support, DLC protocol support, RAS server support and the ability to change virtual MAC addresses.

5. **VPN Server –** VPN Servers may now be loaded and run within a container.

6. **SNMP –** Version 4.0 has an industry standard management information base (MIB), which allows it to be managed by SNMP driven management tools.

7. **More Anti-Virus Support**

   - AVG 7.1.394 and 7..x
   - CA eTrust R and R.1
   - Dr.Web 4.44
   - F-Secure .2-2
   - Kaspersky .0.2.7
   - McAfee
   - Symantec 10.1.4.4000 and higher
   - TrendMicro OfficeScan

8. **Container Update Tool –** The software status and patch level is now viewable in the container registry. The update tool will enable version validation with the host software and replace software with links whenever possible.

9. **Faster Backup and File Exclusion for Windows –** Faster backups and file exclusion are now enabled.

10. **Parallel Container Start –** Containers boot more quickly with parallel processing.

11. **Local Patch Server –** Set up a local patch server for containers to receive patches and run vzup2date on an internal network without access to the Internet.

TOP FEATURES OF VIRTUOZZO 4.0 FOR LINUX-BASED VIRTUAL INFRASTRUCTURE

1. **Online vzcache Upgrade –** vzcache is an important tool for maximizing server efficiency. With Version 4.0, this capability is faster and backup/migration is more reliable, keeping applications and servers available while making more efficient use of memory and space with vzcache consolidation.

2. **VZFS Upgrade –** The enhanced Virtuozzo file system has increased efficiencies in disk space usage and in daily operations, including migration and backup.

3. **I/O Management –** Monitor the amount of disk I/O a container uses and prioritize the I/O amongst containers. This functionality can assist in specialized container management and accounting for usage chargeback.

4. **SNMP –** Version 4.0 has an industry standard management information base (MIB), which allows it to be managed by SNMP driven management tools.

5. **Local Patch Server –** Set up a local patch server for containers to receive patches and run vzup2date on an internal network without access to the Internet.

6. **Template to EZ Template Upgrade –** Upgrade old templates to the new EZ Template format.

7. **EZ Templates Centralized Server –** Create a central server that caches EZ Templates to save traffic, enable a central point of update and maintain a repository of packages that may be deleted locally.

8. **Mount Partition Script –** Version 4.0 allows a remote login to the server even with file system errors.

Using Virtuozzo Containers in Service Plans

OVERVIEW

Virtuozzo is used by service providers to offer shared, dedicated, managed, and VPS service plans to end customers. Virtuozzo's flexibility allows Service Providers to use the virtualization software to partition a server into multiple isolated virtual containers and either aggregate shared customers into containers to limit risk introduced by denial-of-service attacks, to sell each separately as a virtual private server, or to offer the capability of reselling containers to a reseller channel. Successful service providers increase their margins and create compelling service plans through creating virtual appliances, offering pre-configured VPS service plans, and adding Virtuozzo to dedicated servers so that customers can effectively self-manage their server through Virtuozzo's management toolset, or through use of Parallels Plesk Control Panel.

ENHANCED CAPABILITIES FOR SERVICE PROVIDER SERVICE PLANS

Virtuozzo 4.0 has many new capabilities and features that provider Service Providers with new opportunities to grow their revenue and customer base.

1. **Business Continuity**

   Version 4.0 includes several new options to optimize uptime and protect your datacenter's virtual infrastructure.

   - **Windows Server Clustering and Red Hat Clustering Support:** Windows Clustering is now fully supported to allow you to offer Clustered VPS solutions as part of your service offerings.

   - **Extensive backup enhancements:** Virtuozzo 4.0 now fully supports third party backup tools and supports snapshots for Linux so that service providers can sell these backup services.

2. **Parallels Infrastructure Manager (PIM)**

   Version 4.0 introduces Parallels Infrastructure Manager (PIM), a powerful web-based, centralized management interface tool, as part of the Parallels Virtuozzo Containers package. System administrators can efficiently manage their virtual infrastructures from anywhere at anytime.

   - **Reseller support:** PIM allows you to easily set-up, support and bill resellers and reseller customers. Resellers can fully manage their assigned set of virtual servers and assign management rights to customers without the need of support from the service provider system administrator.

3. **Open Platform Integration**

   As part of the OPEN FUSION initiative, many of Version 4.0s's features enable tighter

integration between Parallels Virtuozzo Containers and other Parallels Products. Specifically:

- **Plesk Integration –** Improved integration between Plesk Control Panel and Parallels Power Panel (PPP).

- **SiteBuilder Integration –** Version 4.0 includes the option to integrate the Parallels SiteBuilder software with Parallels Virtuozzo Containers.

4. **Backup Enhancements**

Container backup enhancements that are now available on all platforms include scheduling, selective file browsing, restoring, labeling, faster incremental backups and backing up while keeping a container online. Cross-platform backup is now possible. Store a Windows container backup on a Linux server and a Linux container backup on a Windows server.

TOP FEATURES OF VIRTUOZZO 4.0 FOR WINDOWS-BASED SERVICE PLANS

1. **High Availability and Configuration Support –** Parallels Virtuozzo Containers 4.0 for Windows supports:

   - **Network Load Balancing –** Balance the workload between multiple active containers either on the same or on different servers using Microsoft Load Balancing.

   - **Full-Server Cluster –** Use this configuration to provide redundancy for all of the containers on a server. This configuration is enabled by loading Microsoft clustering on the host and treating each container as a clustered service. Microsoft Clustering enables a failover from an active server to a passive server. This configuration assumes data is stored on a redundant SAN.

   - **Container/Application Level Clustering –** Cluster containers or applications so that if a container or application is unavailable, it is failed over on a passive server. All configurations include a combination of active and passive instances, and data is stored on a redundant SAN. Some configuration examples include:

     - Standalone servers running cluster-aware applications can be paired with passive containers.Typically, several passive containers will be loaded on the same server because these containers are not running and many can reside on the same server.

     - Cluster-aware applications can be loaded in containers along with clustering software. The software will behave as if it is on a standalone server. Any application-supported configurations will be possible, including multiple nodes of active application containers and passive containers.

2. **Expanded Third-Party Backup and Recovery Support –** Version 4.0 comes complete with an extensive range of capabilities in its backup toolset. For organizations that wish to back up containers by using the same procedures as other standalone servers, Version 4.0 supports the following third-party backup agents at the host level:

- CA ARCserve Backup r11 .
- EMC Legato Networker 7.3.2
- IBM Tivoli Storage Manager .3.0.0
- Microsoft Windows NTBackup
- Symantec (Veritas) Backup Exec 1 1 D

Data replication product support for disaster recovery includes CA WANsync v4.0.9 and 4.0.72.

TOP FEATURES OF VIRTUOZZO 4.0 FOR LINUX-BASED SERVICE PLANS

1. **Red Hat Cluster Suite Support –** Use Red Hat Cluster Suite to cluster Parallels Virtuozzo containers in the same manner that standalone servers are clustered. Containers are clustered in an active passive configuration, and Red Hat Clustering performs the failover. This configuration assumes data is on a redundant SAN.

2. **Burstable CPU Limit –** A container can burst up to 100% of the available CPU on the server for a predetermined amount of time. After the allotted time, the container will get only its upper limit of CPU.

3. **Backup Enhancements –** Version 4.0's backup includes online backup, single file restore, backup scheduling and improved network backup time.

4. **Container Suspend and Restore –** Freeze a container and place it in a suspended state. The container can be restored by the container owner.

5. **Container Kickstart –** Containers may now be created using a kickstart-like scenario, including properties such as packages, install scripts, etc. Create application configurations such as full install, minimal, etc.

6. **Container NFS/GFS Client –** Mount and use Parallels Virtuozzo on NFS or GFS storage.

7. **Faster Live Migration –** The Live Migration capability (moving a container to another server and maintaining its availability) is now faster with a new iterative memory movement process.

8. **vzpkglink for EZ Templates –** Manually installed RPM files may now be replaced with links.

Summary

Parallels Virtuozzo Containers is designed for homogeneous environments optimized with single OS virtual environments. Virtuozzo is extremely flexible and offers Service Providers the ability to use the software as both the basis of their virtual infrastructure, as well as a platform from which revenue-generating service plans can be delivered. Virtuozzo Containers 4.0 includes the Parallels Infrastrucure Manager toolset to provide service providers with centralized virtual server management to make it possible to have geographically diverse datacenter locations and remote management capabilities. The latest 4.0 release also includes a host of new capabilities and feature enhancements that allows service providers to provide new service offerings while maintaining current cost structure and generating incremental revenue.