

# Best Practices for cPanel Virtualization Templates

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## Overview

We recommend and support the use of the cPanel installer to install and provision cPanel & WHM. However, we understand that this is not the most efficient way for a VPS (Virtual Private Server) hosting company to provision a VPS, because this process requires extra time. This article explains how hosting companies and data centers can provision a VPS or VM (Virtual Machine) with cPanel & WHM already installed for their customer. The installation of cPanel & WHM from a templated environment reduces the customer's setup time so that they can create a VPS and work on their website rather than their server.

## Requirements

### Note:

You **must** create a SWAP file or partition automatically for each new VPS, even if you assign only 256 MB to it.

### Important:

Because we deprecated 32-bit systems in [cPanel & WHM version 58](#), we recommend that you only create 64-bit templates.

### Remember:

The smaller the virtual disk of the template VM or VPS, the better. Since you will create this virtual disk for only a template, we recommend that you use a very small template (10GB) to deploy new servers. After you convert the template for a customer's VPS, use your virtualization software to automatically expand its virtual disk capacity to a 20 GB minimum.

### Tip:

You can apply for a free development license for your template server or servers via our [Developer License Application](#).

We recommend that you apply for one license per template.

Example: If you create two templates, one for CentOS 7 and one for CentOS 6, apply for two licenses on two separate IP addresses. We keep the IP addresses specific to the template.

### Warning:

To ensure that cPanel, Inc. does not lock your development license, we **strongly** recommend that you create a VM per template and maintain it. This will require one license and IP address per templating VM and will ensure that we do not lock your license or licenses. This will also allow you to start up the VM again when you need to perform updates.

## Create a Minimal VM for Templating

A minimal template VM uses 10 GB of space, but you can expand it later as the customer requires.

This document creates a small template that you will expand after you set it up on the customer's VPS. Create a new minimal VPS to prepare your template.

## Pre-configuration

We provide extensive documentation that explains how to preconfigure cPanel & WHM. For more information, visit the [Installation Guide](#) documentation.

We recommend that you customize the following files:

```
/etc/cpupdate.conf
/etc/cpsources.conf
/etc/wwwacct.conf
/var/cpanel/cpanel.config
```

## Release tier

cPanel, Inc. offers the following release tiers:

- EDGE
- CURRENT
- RELEASE
- STABLE

cPanel & WHM automatically defaults to the RELEASE tier. But, before you install cPanel & WHM, you can configure the `/etc/cpupdate.conf` file to select which release tier cPanel & WHM will use.

For example, if you wished to configure cPanel & WHM to use the CURRENT release tier, run the following commands:

```
# touch /etc/cpupdate.conf
# echo "CPANEL=current" >/etc/cpupdate.conf
```

If you wished to use EDGE or STABLE tiers, replace the word `current` with the desired release tier.

### Notes:

- Your customer can change this setting within WHM at a later time.
- You **cannot** downgrade major versions, and you cannot change a server's release tiers to circumvent this restriction.

## Other files

### Note:

For more information on the `cpanel.config` file, visit our [The cpanel.config File](#) documentation.

### Info:

If you are a cPanel Partner with your own FastUpdate server, you can edit the `HTTPUPDATE` line in the `/etc/cpsources.conf` file so that all of your customers update from your FastUpdate Server.

```
HTTPUPDATE=fastupdate.example.com
```

Read the [Custom update mirrors](#) documentation for more information.

## cPanel Installation

After you finish your pre-configuration, you can install cPanel & WHM. Follow the [Installation Guide](#) as you usually would to install cPanel.

## Post-Installation

After the cPanel installation is complete, you can set new defaults. You can also lock down SSH or implement other additional security requirement configurations.

### Note:

We recommend that you do **not** complete the Initial Setup Wizard. However, if you do

### Warning:

To avoid security issues before you finalize your template, be sure to

choose to log in to WHM when you make the the template, remove `/etc/.whostmgrft` before you publish the template.

**Remember:**

After the user creates a VPS from your provided template, they will run the Initial Setup Wizard with your preconfigured default options.

remove generated SSH host keys and temporary files. Also, clear the hostname from any networking areas within the operating system and the `/etc/wwacct.conf` file.

Before you shut down the VM to create the template, run the following commands to ensure that cPanel, Inc. does not lock your license:

```
# /scripts/restartsrv_chkserverd --stop
# /scripts/restartsrv_cpserverd --stop
# rm -f /usr/local/cpanel/cpanel.lisc
```

The following bash script runs the commands shown above:

```
post-template.sh
#!/bin/bash

readonly PROGNAME=$(basename $0)
readonly PROGDIR=$(readlink -m $(dirname $0))
readonly ARGS="$@"

is_file() {
    local file=$1
    [[ -f $file ]]
}

is_dir() {
    local dir=$1
    [[ -d $dir ]]
}

main() {
    is_dir /usr/local/cpanel \
    && /scripts/restartsrv_cpserverd --stop \
    && /scripts/restartsrv_chkserverd --stop \
    is_file /usr/local/cpanel/cpanel.lisc \
    && rm -f /usr/local/cpanel/cpanel.lisc \
    is_file /etc/.whostmgrft \
    && rm -f /etc/.whostmgrft
    echo "You should now shutdown this instance
and template it up"
}

main
```

## Deploy your VPS

When you deploy the customer's VPS, you **must** automatically update some files. If you use the `libguestfs virt-sysprep` command,

you can achieve this via the "--firstboot" or "--firstboot-command" flags. If you do not use the libguestfs command, consult your hypervisor's documentation for an alternative option to run scripts or commands upon first boot.

**Warning:**

If you use a tool such as libguestfs virt-sysprep to help finalize your template, ensure that you do not accidentally remove any user accounts or cron jobs.

Before you deploy your VPS, complete the following steps:

- Automatically call the `/usr/local/cpanel/bin/set_hostname` script on the first boot of the image before any cPanel services start. You can either randomize the hostname or set the hostname based on your customer's choice.
- Update `ADDR` within `/etc/wwacct.conf` to the main IP address for the VPS.
- If you run a 1:1 NAT environment, run the `/scripts/build_cpnat` script to build your NAT file, and configure Apache accordingly.
- Run the `/scripts/rebuildhttpdconf` script to rebuild your Apache configuration with the correct addresses.

The following bash script executes the steps above, but it does not update `ADDR`:

### cust-deploy.sh

```
#!/bin/bash

readonly PROGNAME=$(basename $0)
readonly PROGDIR=$(readlink -m $(dirname $0))
readonly ARGS="$@"
readonly HOSTNAME=$(hostname --fqdn)
readonly CPHULKPASS=$(/usr/local/cpanel/3rdparty/bin/perl
-MCpanel::PasswdStrength::Generate -e 'print
Cpanel::PasswdStrength::Generate::generate_password(14)')
readonly MSECPASS=$(/usr/local/cpanel/3rdparty/bin/perl
-MCpanel::PasswdStrength::Generate -e 'print
Cpanel::PasswdStrength::Generate::generate_password(14)')
readonly ESTATSPASS=$(/usr/local/cpanel/3rdparty/bin/perl
-MCpanel::PasswdStrength::Generate -e 'print
Cpanel::PasswdStrength::Generate::generate_password(14)')
readonly LPROTPASS=$(/usr/local/cpanel/3rdparty/bin/perl
-MCpanel::PasswdStrength::Generate -e 'print
Cpanel::PasswdStrength::Generate::generate_password(14)')
readonly RCUBEPASS=$(/usr/local/cpanel/3rdparty/bin/perl
-MCpanel::PasswdStrength::Generate -e 'print
Cpanel::PasswdStrength::Generate::generate_password(14)')
readonly MYSQLPASS=$(/usr/local/cpanel/3rdparty/bin/perl
-MCpanel::PasswdStrength::Generate -e 'print
Cpanel::PasswdStrength::Generate::generate_password(14)')

is_file() {
    local file=$1
    [[ -f $file ]]
}

is_dir() {
    local dir=$1
    [[ -d $dir ]]
}

main() {
    is_dir /usr/local/cpanel \
```

```
&& /usr/local/cpanel/bin/set_hostname ${HOSTNAME} \  
&& /usr/local/cpanel/bin/checkallsslcerts --allow-retry \  
&& /scripts/build_cpnat \  
&& /scripts/rebuildhttpdconf \  
&& /scripts/mysqlpasswd root ${MYSQLPASS} \  
is_file /var/cpanel/hulkd/password \  
&& /scripts/mysqlpasswd cphulkd ${CPHULKPASS} \  
&& echo -e  
"user=\"cphulkd\" \npass=\"${CPHULKPASS}\" >/var/cpanel/hulkd/password \  
&& /scripts/restartsrv_cphulkd  
is_file /var/cpanel/modsec_db_pass \  
&& /scripts/mysqlpasswd modsec ${MSECPASS} \  
&& echo ${MSECPASS} >/var/cpanel/modsec_db_pass  
is_file /var/cpanel/roundcubepass \  
&& /scripts/mysqlpasswd roundcube ${RCUBEPASS} \  
&& echo ${RCUBEPASS} >/var/cpanel/roundcubepass  
is_file /var/cpanel/eximstatspass \  
&& /scripts/mysqlpasswd eximstats ${ESTATSPASS} \  
&& echo ${ESTATSPASS} >/var/cpanel/eximstatspass \  
&& /scripts/restartsrv_eximstats  
is_file /var/cpanel/leechprotectpass \  
&& /scripts/mysqlpasswd leechprotect ${LPROTPASS} \  
&& echo ${LPROTPASS} >/var/cpanel/leechprotectpass
```

```
}  
  
main
```

## Updating your Templates

As cPanel, Inc. releases updates, you will need to update your templates.

To avoid this situation, plan regular updates on all of your templates.

To update your template, run the following commands:

```
# yum update -y  
# /scripts/upcp
```

Before you shut down the VM to create the template, run the following commands to ensure that cPanel, Inc. does not lock your license:

```
# /scripts/restartsrv_chkserverd --stop  
# /scripts/restartsrv_cpserverd --stop  
# rm -f /usr/local/cpanel/cpanel.lisc
```

The following bash script runs the commands shown above:

## post-template.sh

```
#!/bin/bash

readonly PROGNAME=$(basename $0)
readonly PROGDIR=$(readlink -m $(dirname $0))
readonly ARGS="$@"

is_file() {
    local file=$1
    [[ -f $file ]]
}

is_dir() {
    local dir=$1
    [[ -d $dir ]]
}

main() {
    is_dir /usr/local/cpanel \
    && /scripts/restartsrv_cpssrvd --stop \
    && /scripts/restartsrv_chkservd --stop
    is_file /usr/local/cpanel/cpanel.lisc \
    && rm -f /usr/local/cpanel/cpanel.lisc
    is_file /etc/.whostmgrft \
    && rm -f /etc/.whostmgrft
    echo "You should now shutdown this instance and template it up"
}

main
```

## Final Notes

We recommend that you meet or exceed our [system requirements](#) when you offer templates of a cPanel & WHM installation. The **minimum** package that you offer with this template should require is 768 MB for CentOS 6 or 1 GB for CentOS 7, and it should include a minimum of 20 GB of drive space.

Most providers offer a few different templates.

For example:

cPanel & CentOS 6
cPanel & CentOS 7
cPanel & CloudLinux 6
cPanel & CloudLinux 7

### Tip:

If you wish to offer template installations of cPanel & WHM We recommend that you become a cPanel Partner. Check out our [Partner NOC Requirements](#). cPanel Partners can use our API to automatically provision their own cPanel, CloudLinux™, and KernelCare licenses through their billing system. cPanel Partners can also enable or disable some very specific options within WHM. For more information, see our [Partner NOC requirements](#).

## Virtualization-specific Caveats

# OpenVZ/Virtuozzo

## Common Issues:

- The hostname on OpenVZ/Virtuozzo may not meet the requirement of a **Fully Qualified Domain Name (FQDN)** on CentOS 7. Virtuozzo controls the hostname via VPS configuration (the `--hostname` parameter of the `vzctl` or `prlctl` commands). If you set the hostname manually from inside the VPS, Virtuozzo will reset the hostname on the next reboot. Ensure that you set up the full hostname correctly after you provision the VM, because cPanel & WHM **requires** an FQDN.
- OpenVZ/Virtuozzo requires that you enable second-level quotas, which can cause quota-initiation issues. For more information read our [Enable Quotas on a Virtuozzo® VPS](#) documentation, or [Virtuozzo's Documentation](#).
- Jailshell requires specific steps to enable a full proc mount. For more information, read our [How to Troubleshoot Jailshell Problems on a Virtuozzo or OpenVZ VPS](#) documentation.

## Related Documentation

Suggested documentation [For cPanel users](#) [For WHM users](#) [For developers](#)

- [How to Troubleshoot Jailshell Problems on a Virtuozzo or OpenVZ VPS](#)
- [Best Practices for cPanel Virtualization Templates](#)

### Content by label

There is no content with the specified labels



- [How to Troubleshoot Jailshell Problems on a Virtuozzo or OpenVZ VPS](#)
- [Best Practices for cPanel Virtualization Templates](#)
  
- [How to Troubleshoot Jailshell Problems on a Virtuozzo or OpenVZ VPS](#)
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