
Windows 10 で Vagrant を使う

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第 1 章

Vagrant とは

- Oracle VritualBox や VMware Workstation などの仮想環境と組み合わせて使用し、仮想環境上に自動でサーバーを構築するツール
- サーバー構築後に Ansible などの構成管理ツールやシェルスクリプトと連携し、アプリケーションなどのインストールや設定まで自動化が可能
- Windows、macOS、Linux 用が提供されている

第 2 章

検証環境

- Microsoft Windows 10 Pro Version 1909 (64-bit)
- HashiCorp Vagrant 2.2.7 (Windows - 64-bit)
- Oracle VirtualBox 6.1.2 (Windows hosts)

2.1 環境構築

Windows 上に Vagrant の実行環境を構築します。必要なアプリケーションです。

- Oracle VirtualBox
- Vagrant
- テキストエディタ

テキストエディタはサクラエディタなど、使い慣れたものを準備ください。

【トピックス】

- Oracle VirtualBox
 - ・ ダウンロード
 - ・ インストール
 - Vagrant
 - ・ ダウンロード
 - ・ インストール
-

2.1.1 Oracle VirtualBox

Oracle VirtualBox をダウンロード・インストールします。

ダウンロード

Oracle VirtualBox のダウンロードページ から Windows hosts をダウンロードします。

- <https://www.virtualbox.org/wiki/Downloads>

A screenshot of a web browser showing the VirtualBox Downloads page. The browser's address bar displays 'https://www.virtualbox.org/wiki/Downloads'. The page features the VirtualBox logo on the left and a large heading 'VirtualBox Download VirtualBox' on the right. Below the heading, there is a section for 'VirtualBox binaries' with links to various operating systems. The 'Windows hosts' link is highlighted with a red box. Another section, 'VirtualBox 6.1.2 Oracle VM VirtualBox Extension Pack', also has a red box around its 'All supported platforms' link. The page includes a sidebar with navigation links like 'About', 'Screenshots', and 'Downloads'.

Downloads – Oracle VM VirtualB x +

← → ↺ 🔒 <https://www.virtualbox.org/wiki/Downloads>



VirtualBox

Download VirtualBox

Here you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

If you're looking for the latest VirtualBox 6.0 packages, see [VirtualBox 6.0](#) virtualization, as this has been discontinued in 6.1. Version 6.0 will remain supported until 2021-01-01.

If you're looking for the latest VirtualBox 5.2 packages, see [VirtualBox 5.2](#) as this has been discontinued in 6.0. Version 5.2 will remain supported until 2021-01-01.

VirtualBox 6.1.2 platform packages

- ➔ [Windows hosts](#)
- ➔ [OS X hosts](#)
- ➔ [Linux distributions](#)
- ➔ [Solaris hosts](#)

The binaries are released under the terms of the GPL version 2.

See the [changelog](#) for what has changed.

You might want to compare the checksums to verify the integrity of downloaded files. *checksum algorithm must be treated as insecure!*

- ➔ [SHA256 checksums, MD5 checksums](#)

Note: After upgrading VirtualBox it is recommended to upgrade the guest additions.

VirtualBox 6.1.2 Oracle VM VirtualBox Extension Pack

- ➔ [All supported platforms](#)

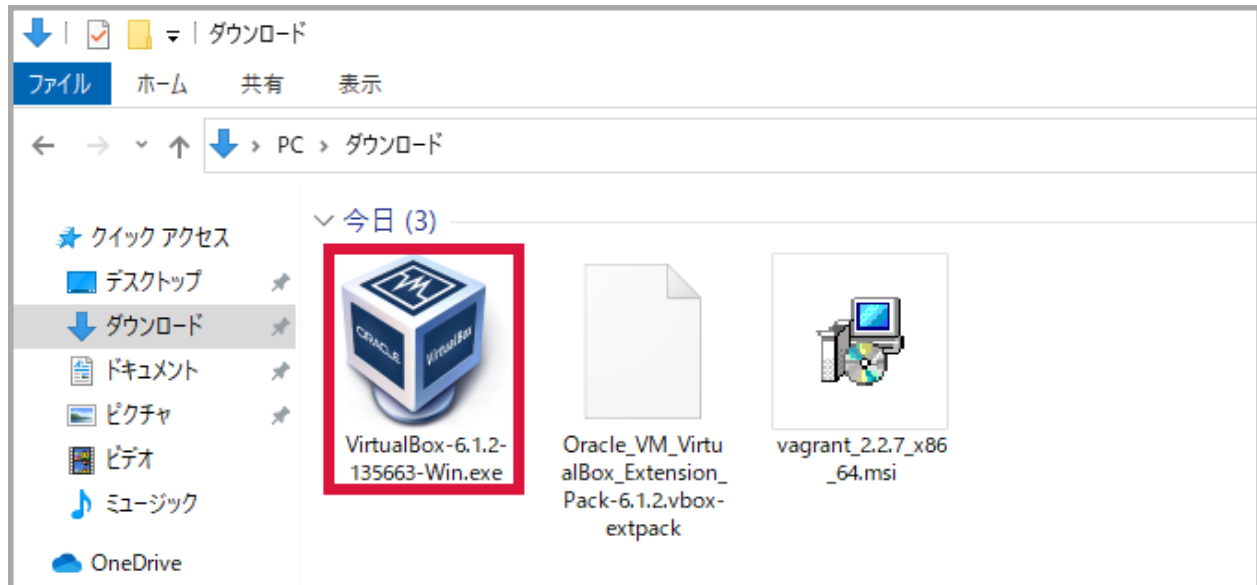
Support for USB 2.0 and USB 3.0 devices, VirtualBox RDP, disk encryption, and more. For an introduction to this Extension Pack. The Extension Pack binaries are released under the terms of the GPL version 2. *Please install the same version extension pack as your installed version of VirtualBox.*

[About](#)
[Screenshots](#)
[Downloads](#)
[Documentation](#)
 [End-user docs](#)
 [Technical docs](#)
[Contribute](#)
[Community](#)

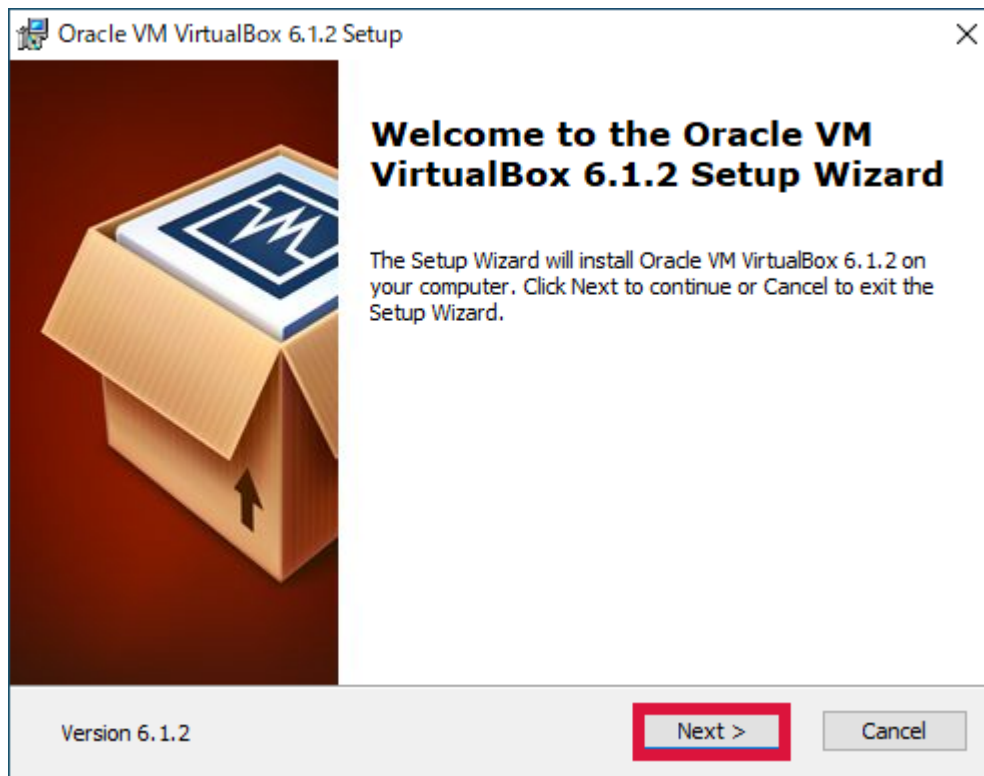
注釈: VirtualBox にとって Extension Pack はいくつとメリットがあるのでお勧めです。

インストール

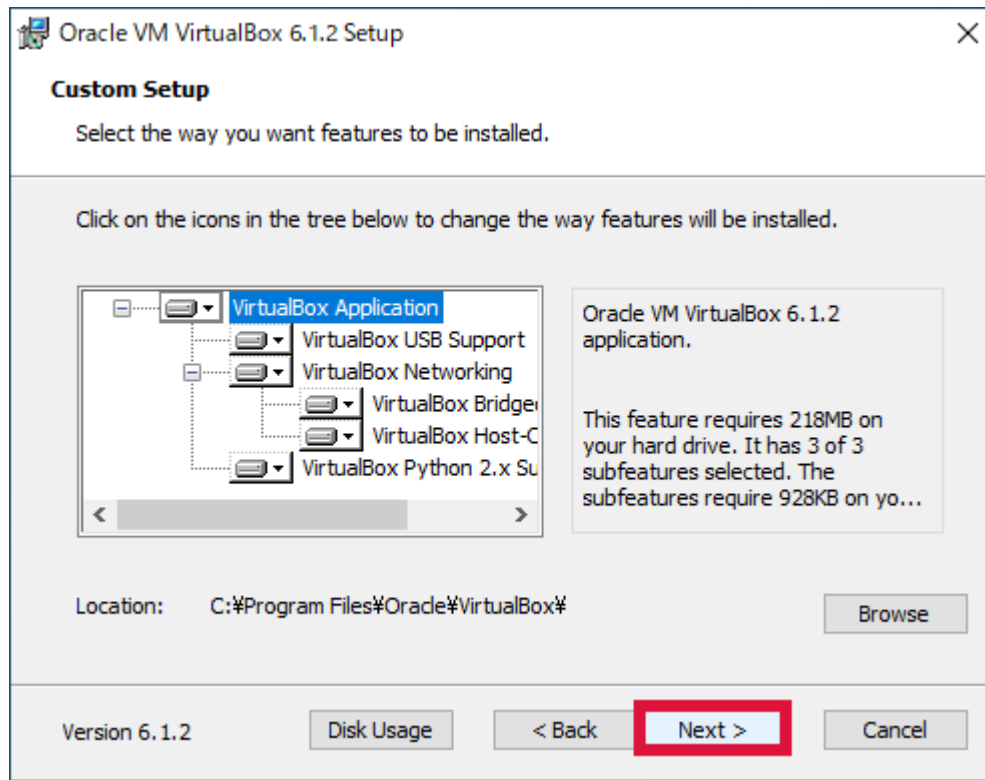
1. インストールファイルを起動



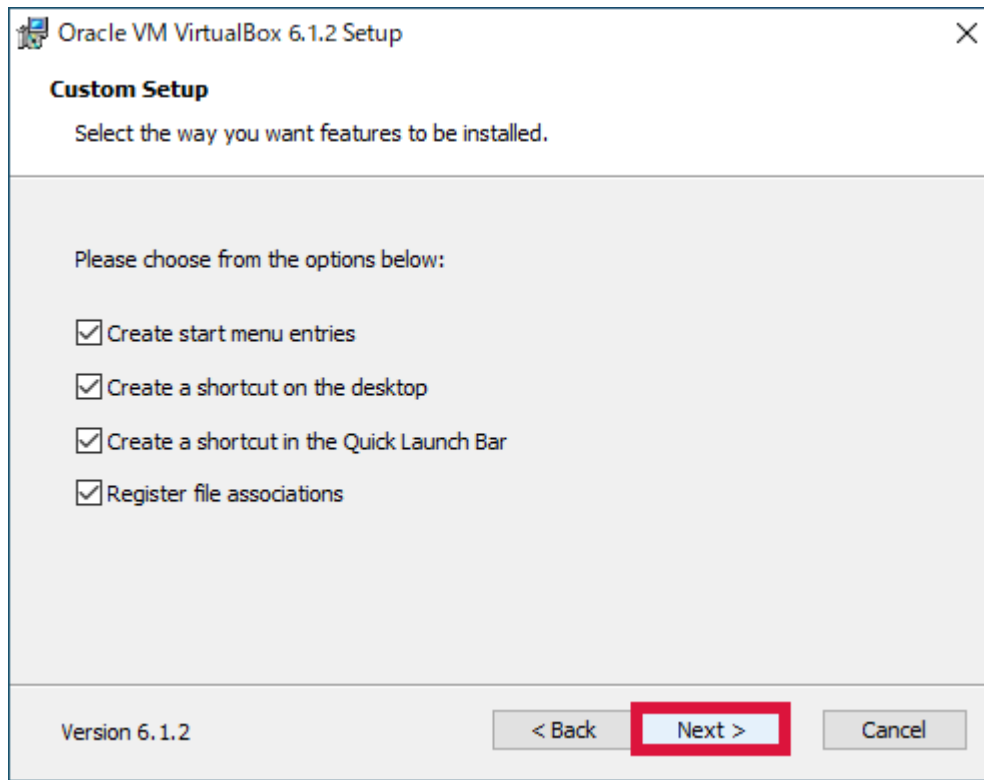
2. *Next* をクリック



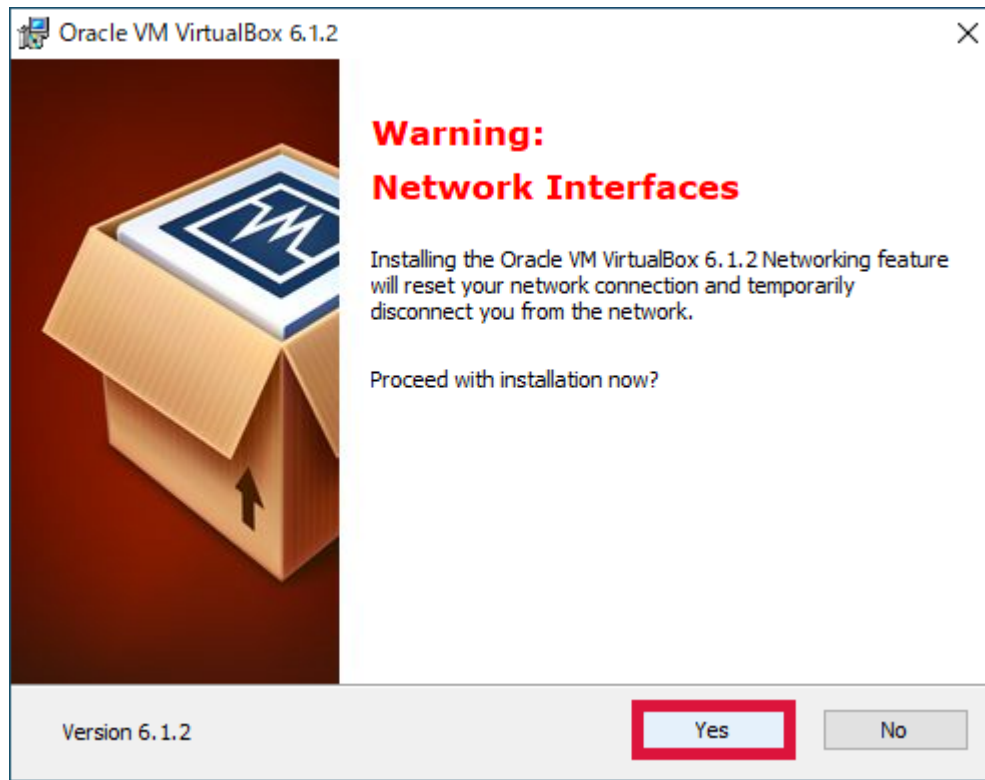
3. *Next* をクリック



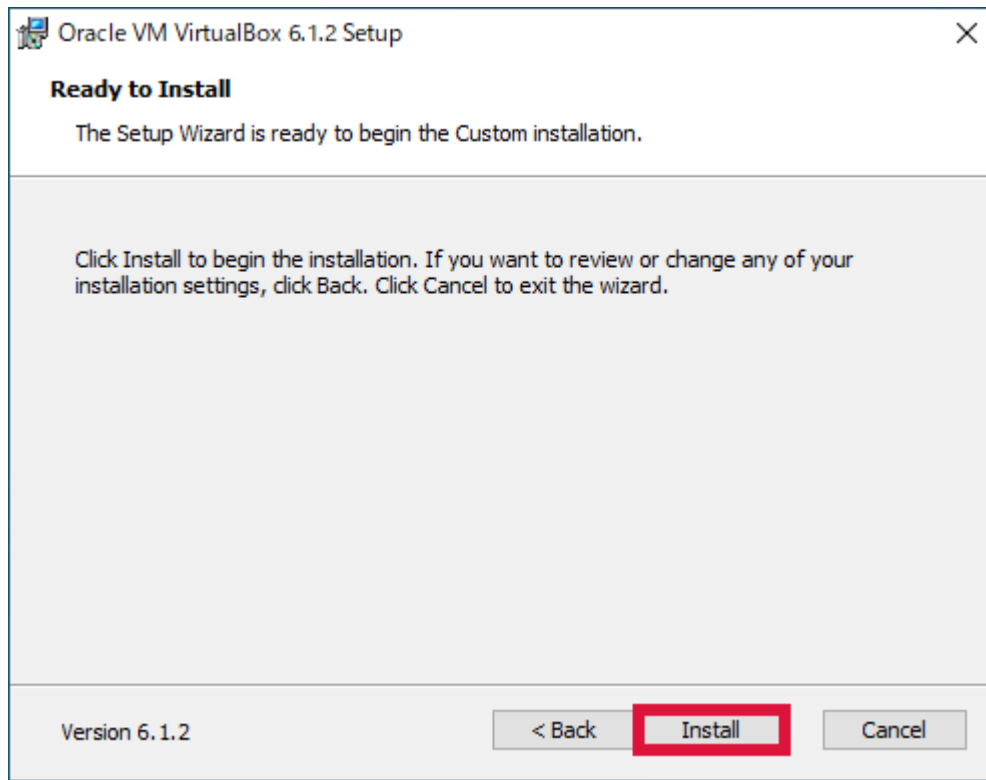
4. **Next** をクリック



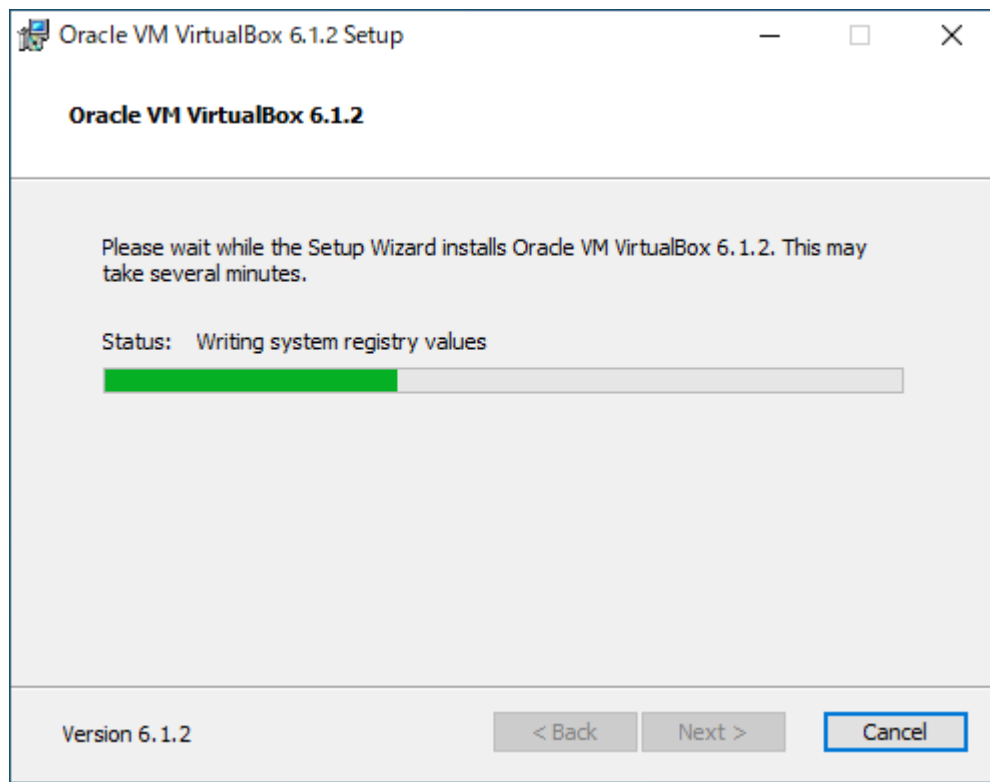
5. **Yes** をクリック



6. *Install* をクリック



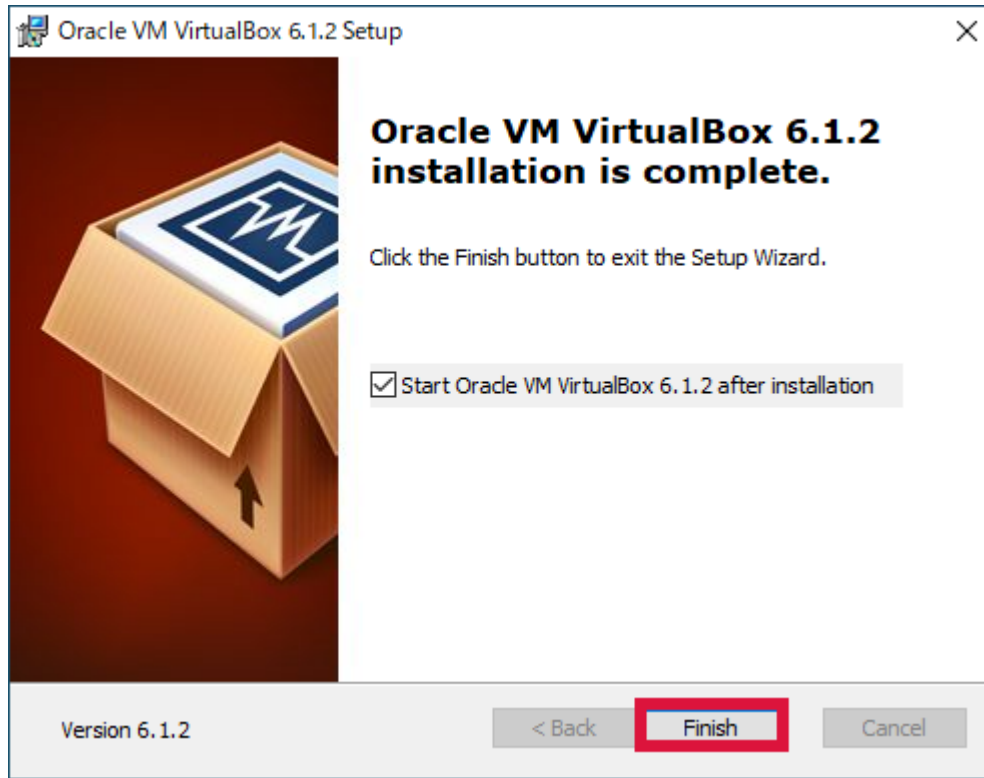
7. インストール中



8. インストール (I) をクリック



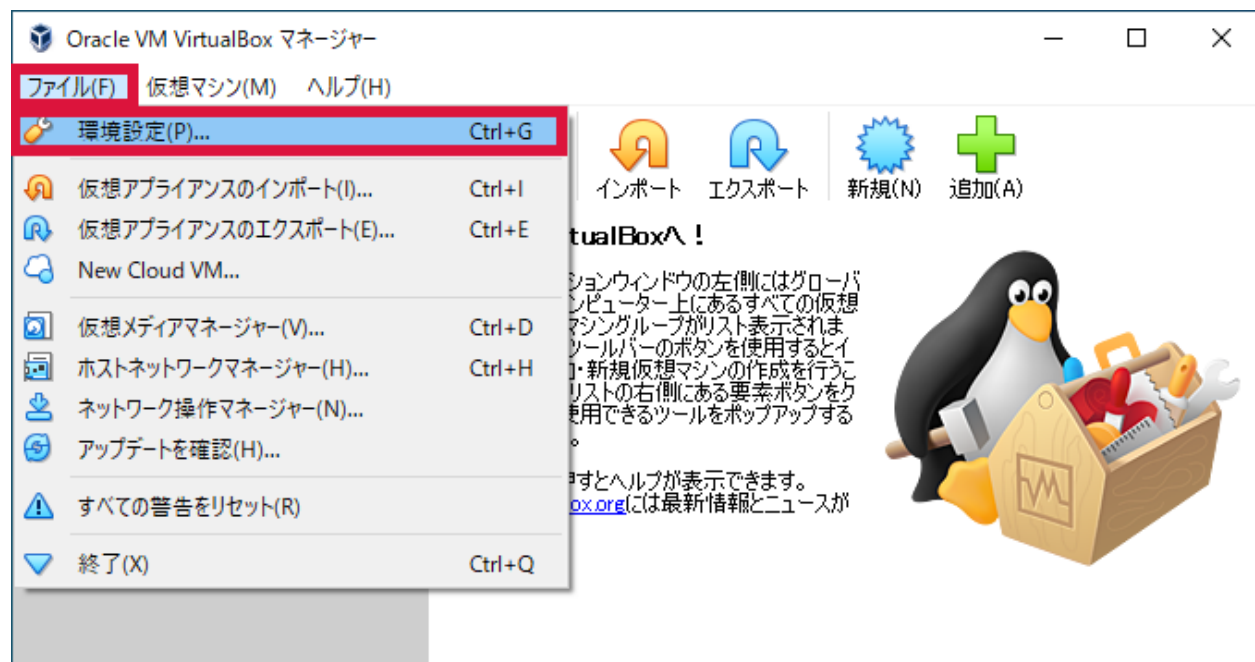
9. *Finish* をクリック



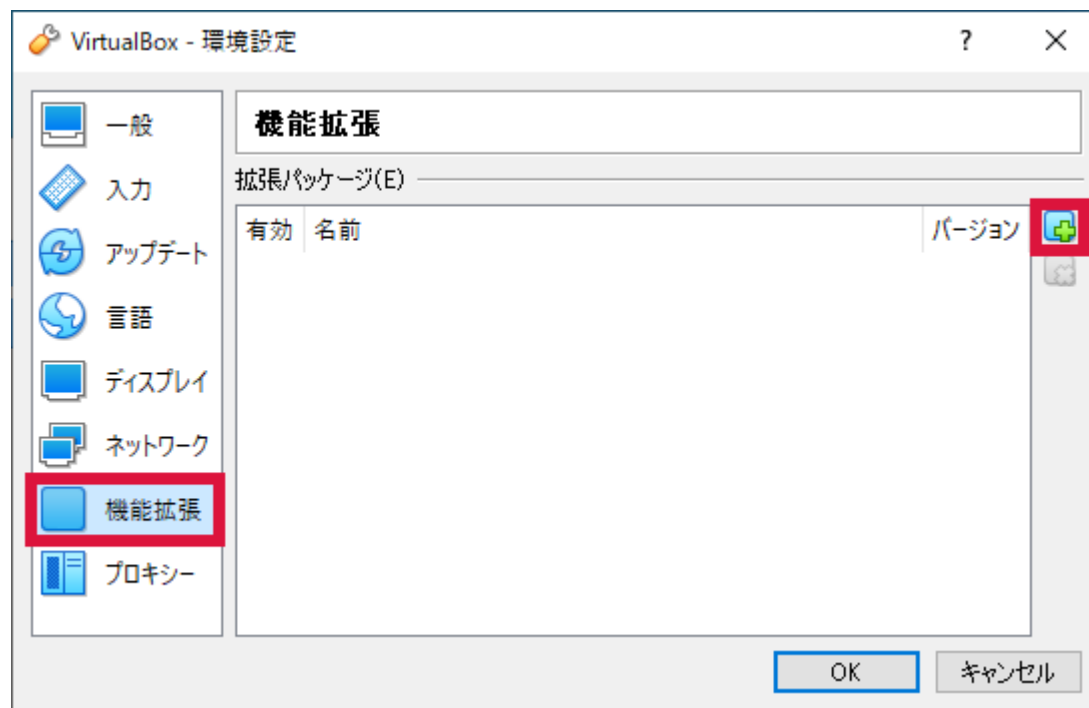
10. Oracle VirtualBox のインストールが終了



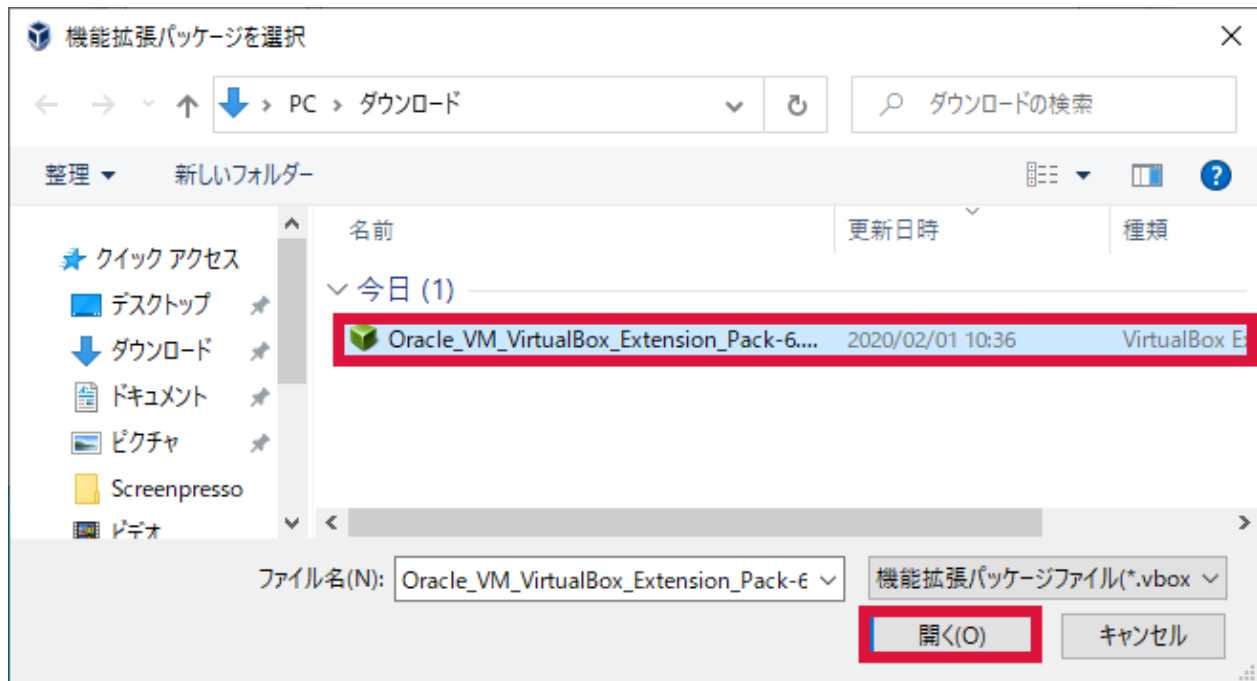
11. ファイル (F) をクリック → 環境設定 (P) ... をクリック



12. 拡張機能 をクリック → + をクリック



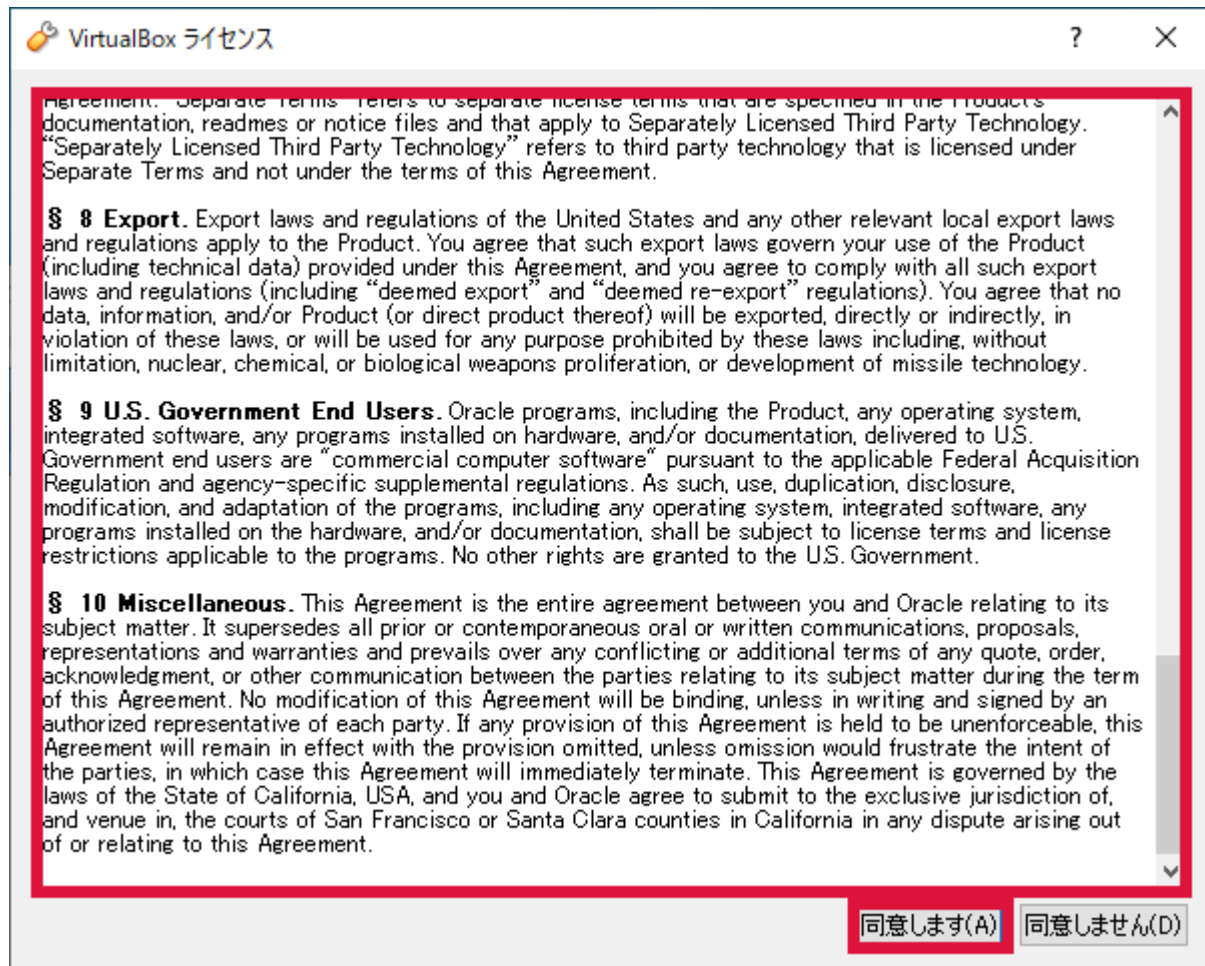
13. Extension Pack を選択 → 開く (O) をクリック



14. インストール をクリック



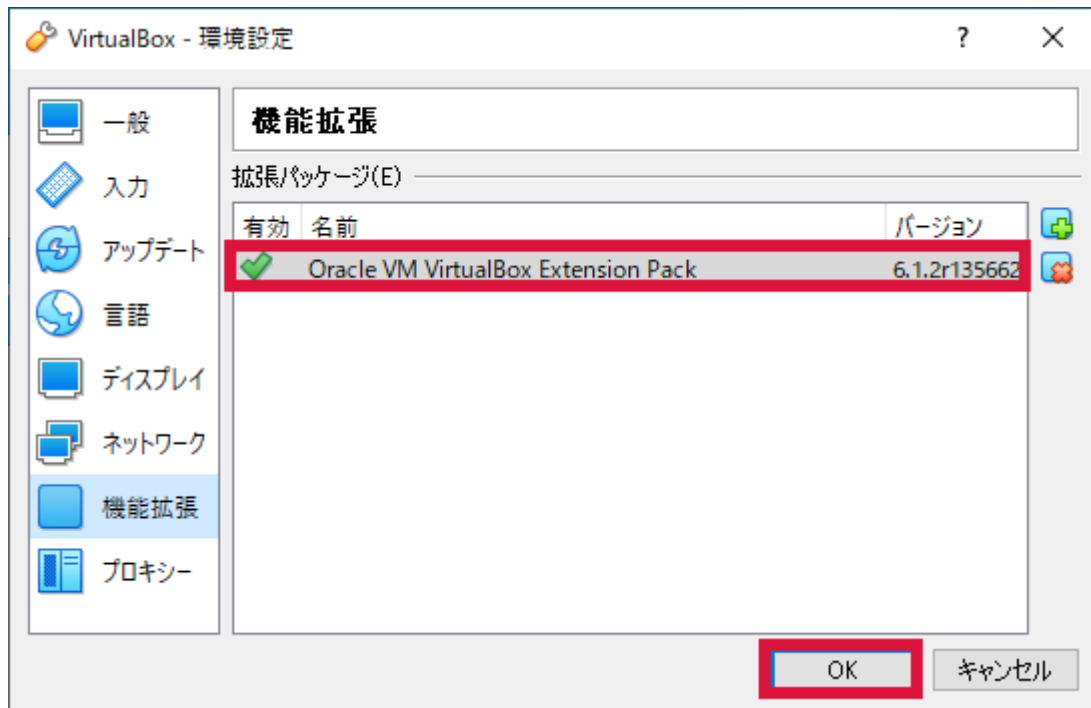
15. ライセンス条文を最後までスクロール → 同意します (A) をクリック



16. OK をクリック



17. Extension Pack が追加されたことを確認 → OK をクリック



18. Extension Pack のインストール終了



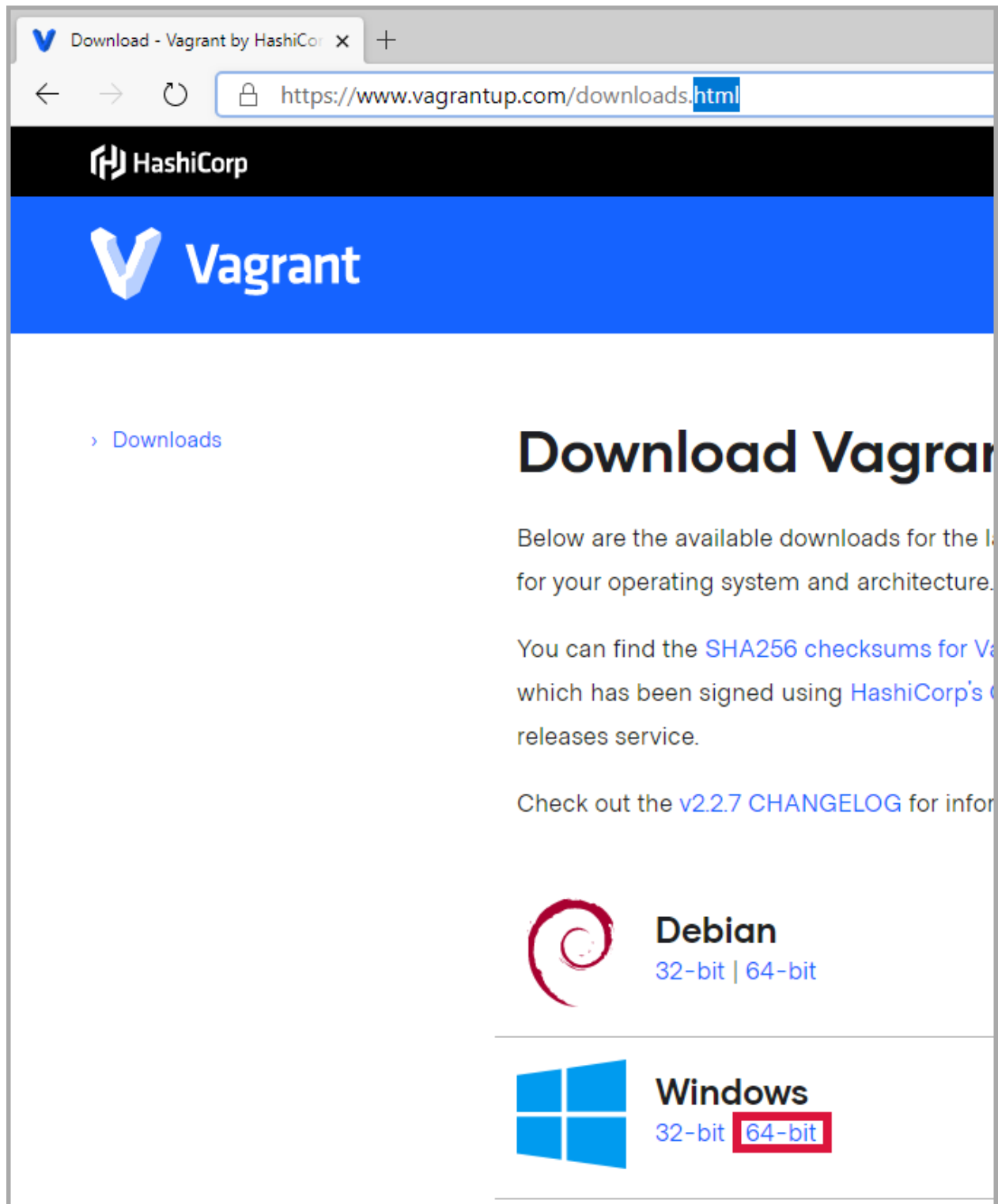
2.1.2 Vagrant

Vagrant をダウンロード・インストールします。

ダウンロード

Vagrant の[ダウンロードページ](#) から Windows 64-bit をダウンロードします。

- <https://www.vagrantup.com/downloads.html>

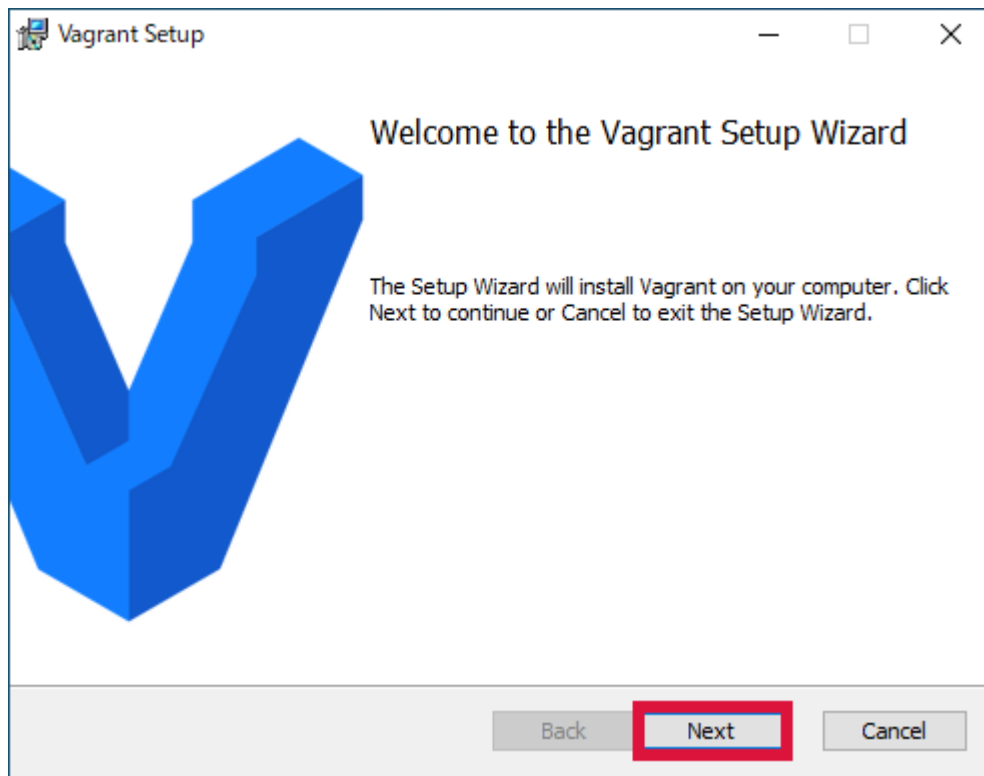


インストール

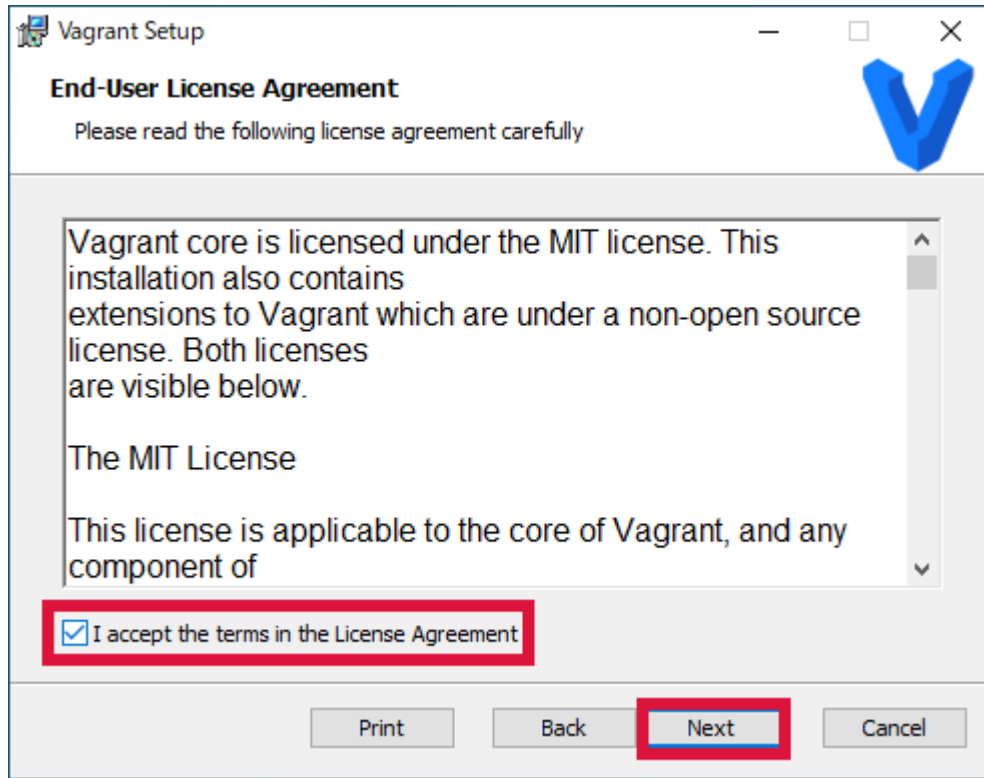
1. インストールファイルを起動



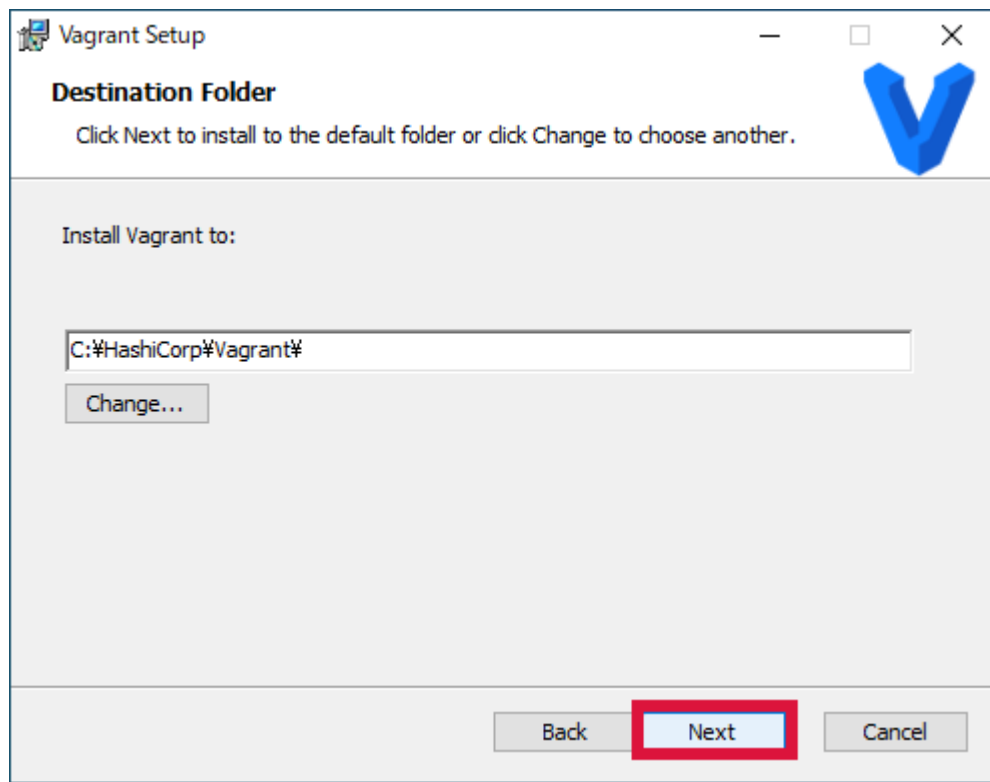
2. *Next* をクリック



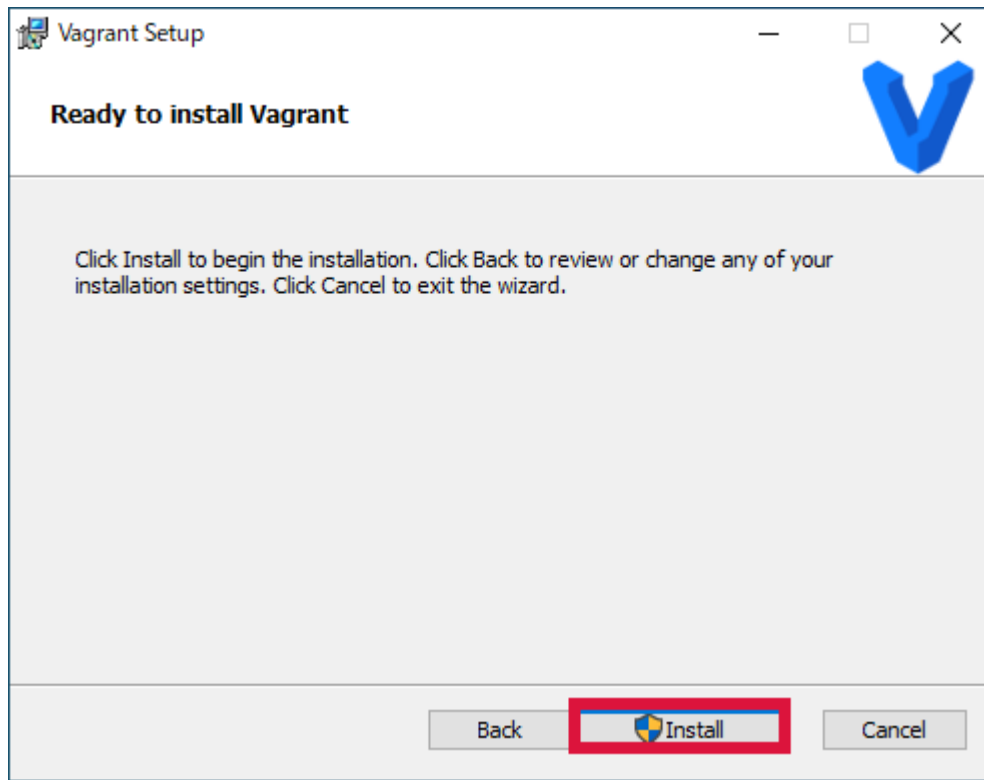
3. I accept . . . にチェックを入れる → **Next** をクリック



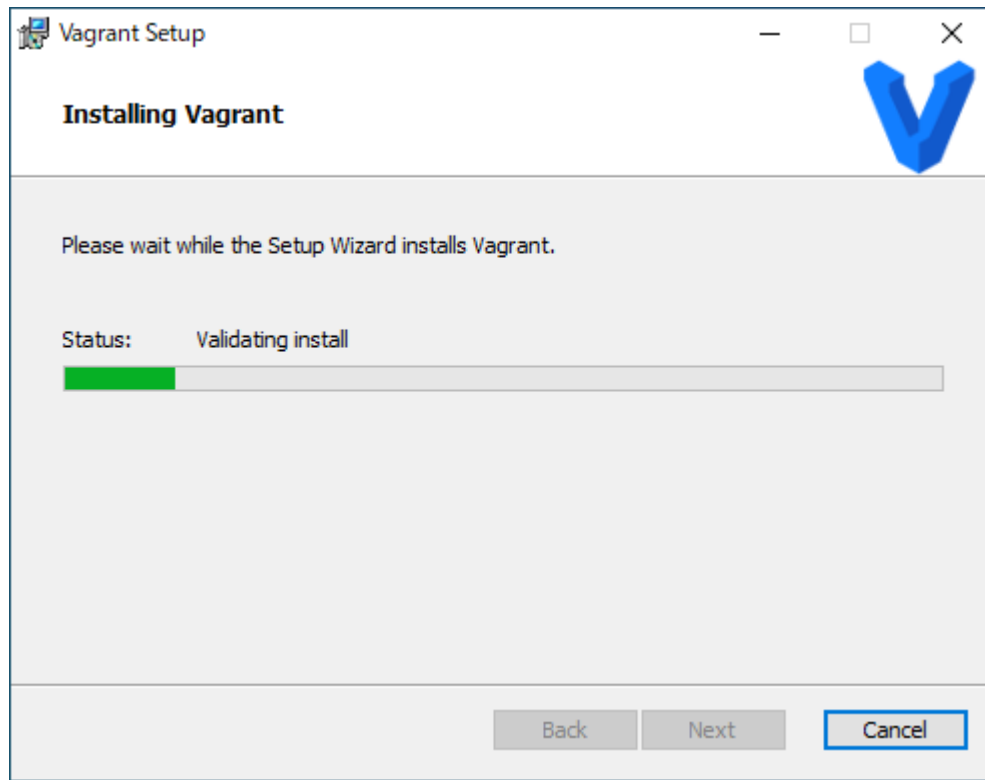
4. **Next** をクリック



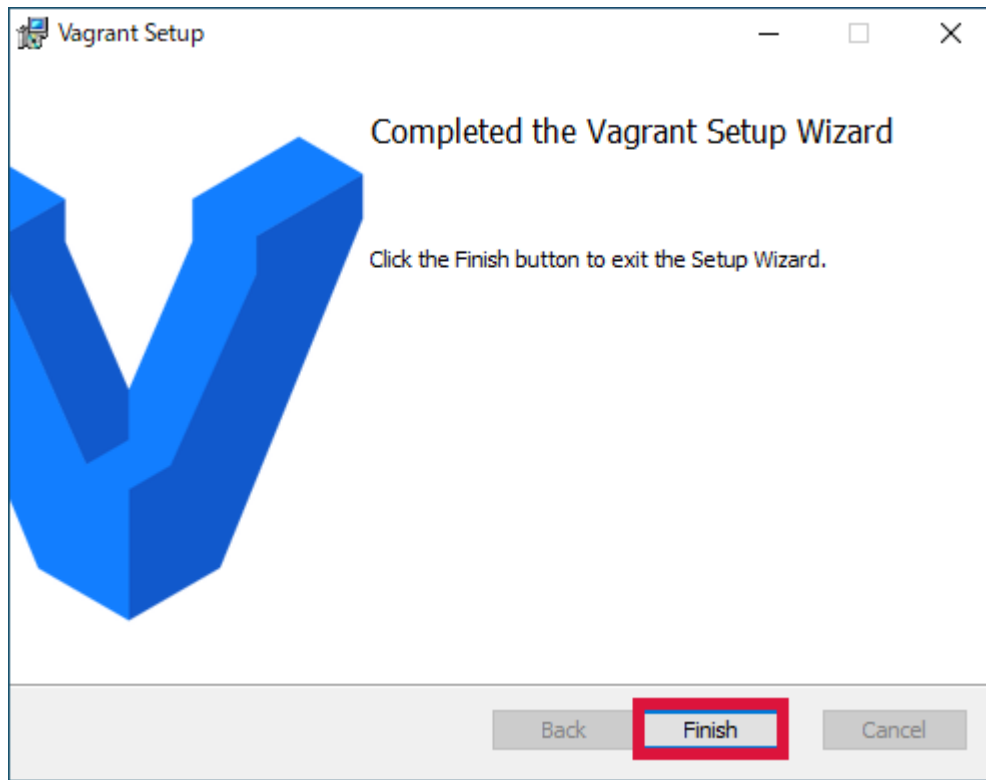
5. *Install* をクリック



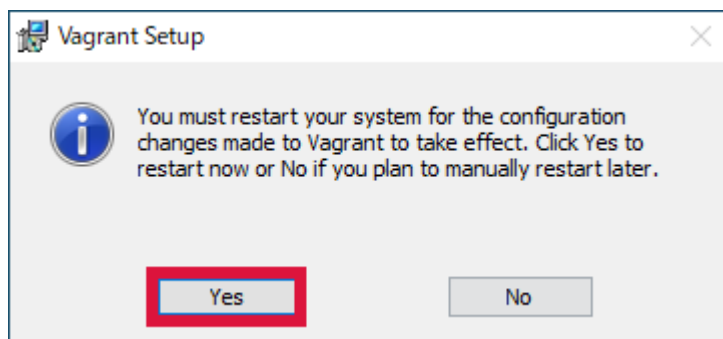
6. インストール中



7. **Finish** をクリック



8. **Yes** をクリック



9. 再起動 → ログイン



10. コマンドプロンプトを起動 → バージョン確認

vagrant --version

vagrant -v

```
PS C:\Users\user> vagrant --version
Vagrant 2.2.7
PS C:\Users\user>
PS C:\Users\user> vagrant -v
Vagrant 2.2.7
PS C:\Users\user>
```

2.2 用語

Vagrant を使用するときの用語（キーワード）です。

2.2.1 プロバイダ

Oracle VirtualBox や VMware Workstation などの仮想環境を指します。

2.2.2 プロビジョニング

Ansible などの構成管理ツールやシェルスクリプトでアプリケーションのインストールや設定を行うことです。

2.2.3 Box ファイル

仮想マシンのイメージファイル。Vagrant Cloud や GitHub などから入手します。このファイルと *Vagrantfile* を使用して仮想マシンを作成します。作成した仮想マシンを元に Box ファイルを作成できます。

2.2.4 Vagrantfile

仮想マシンの設定ファイル。IP アドレスなどの設定情報を記載します。このファイルと *Box ファイル* を使用して仮想マシンを作成します。

2.2.5 Vagrant コマンド

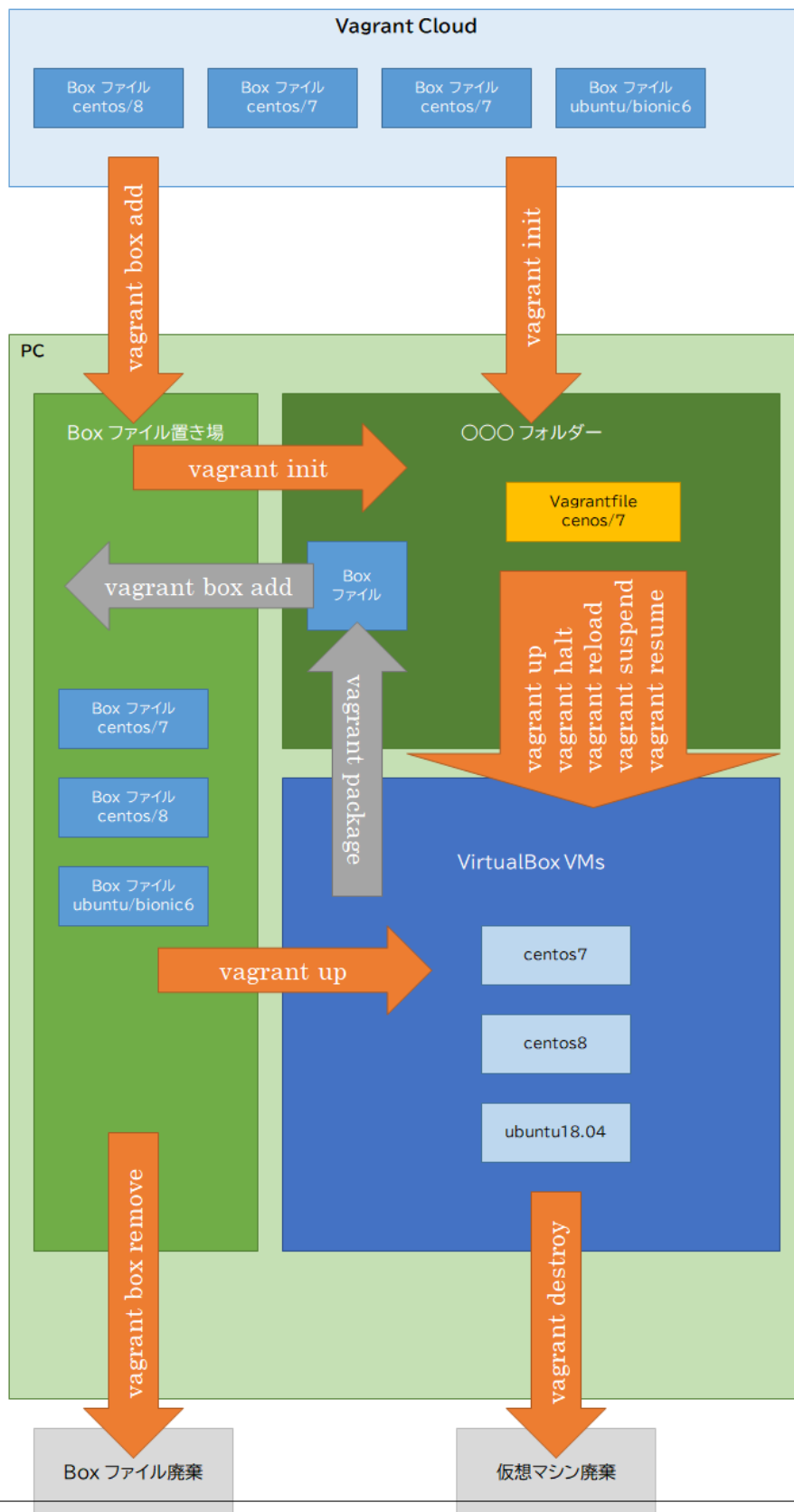
Vagrant を操作するためのコマンドのことです。バージョン確認で実行した"**vagrant --version**"も Vagrant コマンドです。

2.3 主な Vagrant コマンド

【トピックス】

- ・ コマンドとフォルダ / ファイルの関係図
- ・ コマンドリスト

2.3.1 コマンドとフォルダ / ファイルの関係図



2.3.2 コマンドリスト

Box ファイルの操作

vagrant box add

- **vagrant box add** Box ファイル名
- **vagrant box add** Box ファイル名 URL
- **vagrant box add** Box ファイル名 path
- Box ファイルをダウンロードする。
- ダウンロード先を指定しない場合 [Vagrant Cloud](#) からダウンロードする。
- Vagrant Cloud 以外、例えば GitHub からダウンロードするときはダウンロード先の URL を指定する。
- ダウンロード先を path で指定できるときはその path を指定する。

vagrant box remove

- **vagrant box remove** Box ファイル名
- ダウンロードした Box ファイルから指定した Box ファイルを廃棄（削除）する。

vagrant box list

- **vagrant box list**
- ダウンロード済みの Box ファイルを一覧で表示する。

仮想マシンの操作

vagrant init

- **vagrant init** Box ファイル名
- 指定した Box ファイル用の Vagrantfile が作成される。

vagrant up

- **vagrant up**
- 仮想マシンを起動する。
- 仮想マシンが作成されていないときは仮想マシンの作成 → 起動する。

- Box ファイルがダウンロードしていないときはダウンロードする。
- サスペンド状態の仮想マシンをリジュームする。

vagrant halt

- **vagrant halt**
- 仮想マシンを停止する。

vagrant reload

- **vagrant reload**
- 仮想マシンを再起動する。

vagrant suspend

- **vagrant suspend**
- 仮想マシンをサスペンドする。

vagrant resume

- **vagrant resume**
- サスペンド状態の仮想マシンをリジュームする。

vagrant package

- **vagrant package**
- 仮想マシンから Box ファイルを作成する。

vagrant destroy

- **vagrant destroy**
- 仮想マシンを廃棄（削除）する。

vagrant ssh

- **vagrant ssh**
- 仮想マシンに ssh 接続する。

2.4 ヘルプ

ヘルプの表示方法

vagrant <COMMAND> -h

vagrant <COMMAND> <SUBCOMMAND> -h

```
PS C:\Users\user> vagrant -h
Usage: vagrant [options] <command> [<args>]

    -v, --version                Print the version and exit.
    -h, --help                  Print this help.

Common commands:
    box                          manages boxes: installation, removal, etc.
    cloud                       manages everything related to Vagrant Cloud
    destroy                     stops and deletes all traces of the vagrant machine
    global-status               outputs status Vagrant environments for this user
    halt                        stops the vagrant machine
    help                        shows the help for a subcommand
    init                        initializes a new Vagrant environment by creating a Vagrantfile
    login
    package                     packages a running vagrant environment into a box
    plugin                     manages plugins: install, uninstall, update, etc.
    port                        displays information about guest port mappings
    powershell                 connects to machine via powershell remoting
    provision                   provisions the vagrant machine
    push                       deploys code in this environment to a configured destination
    rdp                         connects to machine via RDP
    reload                     restarts vagrant machine, loads new Vagrantfile configuration
    resume                     resume a suspended vagrant machine
    snapshot                   manages snapshots: saving, restoring, etc.
    ssh                        connects to machine via SSH
    ssh-config                 outputs OpenSSH valid configuration to connect to the machine
    status                     outputs status of the vagrant machine
    suspend                   suspends the machine
    up                         starts and provisions the vagrant environment
    upload                     upload to machine via communicator
    validate                   validates the Vagrantfile
    version                   prints current and latest Vagrant version
    winrm                     executes commands on a machine via WinRM
    winrm-config               outputs WinRM configuration to connect to the machine

For help on any individual command run `vagrant COMMAND -h`
```

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```
Additional subcommands are available, but are either more advanced
or not commonly used. To see all subcommands, run the command
`vagrant list-commands`.
PS C:\Users\user>
```

```
PS C:\Users\user> vagrant box -h
Usage: vagrant box <subcommand> [<args>]
```

Available subcommands:

```
add
list
outdated
prune
remove
repackage
update
```

```
For help on any individual subcommand run `vagrant box <subcommand> -h`
PS C:\Users\user>
```

```
PS C:\Users\user> vagrant box add -h
Usage: vagrant box add [options] <name, url, or path>
```

Options:

<code>-c, --clean</code>	Clean any temporary download files
<code>-f, --force</code>	Overwrite an existing box if it exists
<code>--insecure</code>	Do not validate SSL certificates
<code>--cacert FILE</code>	CA certificate for SSL download
<code>--capath DIR</code>	CA certificate directory for SSL download
<code>--cert FILE</code>	A client SSL cert, if needed
<code>--location-trusted</code>	Trust 'Location' header from HTTP redirects and
→ use the same credentials for subsequent urls as for the initial one	
<code>--provider PROVIDER</code>	Provider the box should satisfy
<code>--box-version VERSION</code>	Constrain version of the added box

The box descriptor can be the name of a box on HashiCorp's Vagrant Cloud, or a URL, or a local .box file, or a local .json file containing the catalog metadata.

The options below only apply if you're adding a box file directly, and not using a Vagrant server or a box structured like 'user/box':

<code>--checksum CHECKSUM</code>	Checksum for the box
<code>--checksum-type TYPE</code>	Checksum type (md5, sha1, sha256)
<code>--name BOX</code>	Name of the box

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```
-h, --help          Print this help
PS C:\Users\user>
```

2.5 ウォークスルー

Vagrant コマンドを実際に使用し、CentOS 7 の仮想マシンの作成から廃棄までを実行します。Box ファイルは CentOS 公式の "centos/7" を使用します。

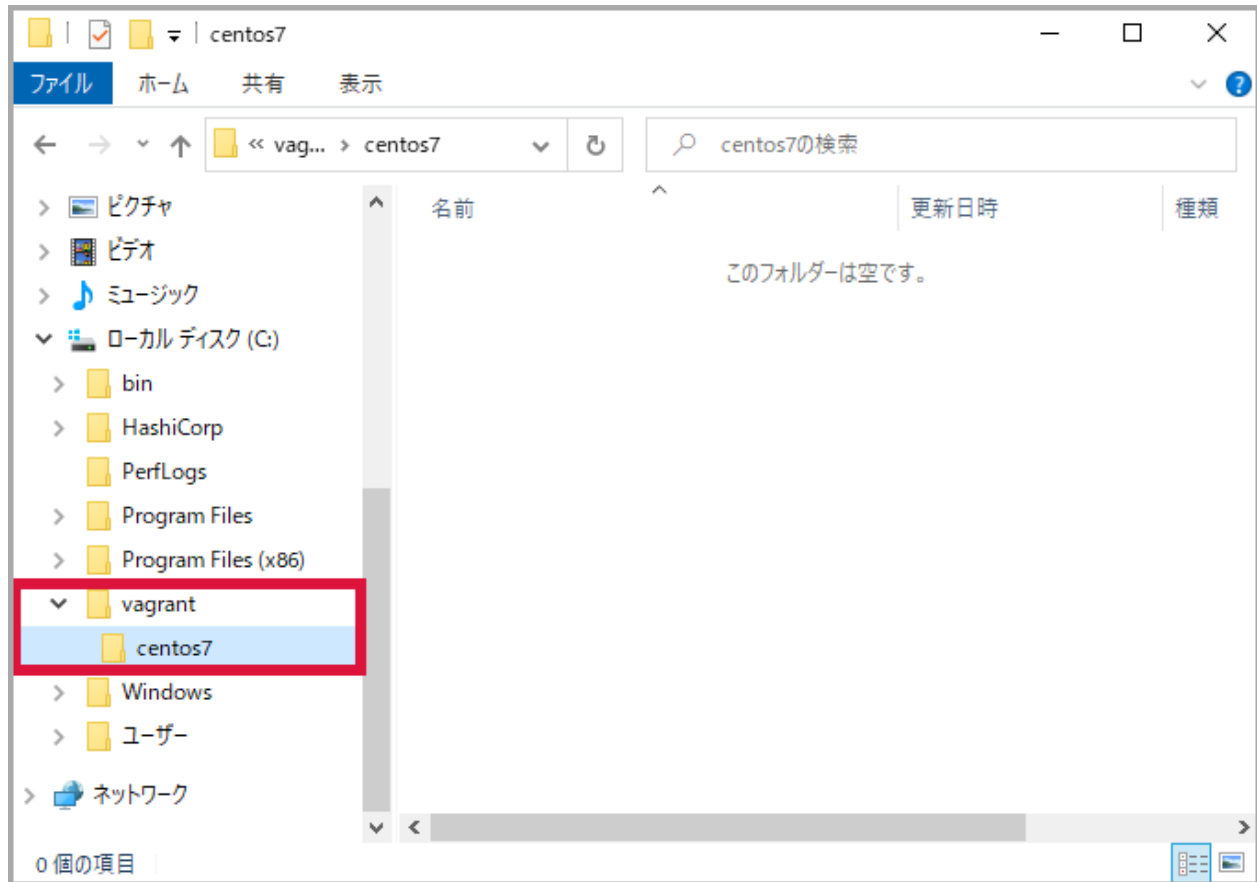
【トピックス】

- *Vagrant* 用のフォルダーを作成
 - *Box* ファイルをダウンロード
 - *Vagrantfile* を作成
 - 仮想マシンを起動
 - 仮想マシンに接続
 - 仮想マシンを再起動
 - 仮想マシンを停止 (シャットダウン)
 - 仮想マシンをサスペンド
 - 仮想マシンをリジューム
 - 仮想マシンの状態を表示
 - 仮想マシンを削除
 - *Box* ファイルを削除
-

2.5.1 Vagrant 用のフォルダーを作成

Box ファイルごとにフォルダーが必要なので、次の構成でフォルダーを作成しました。

```
c:\vagrant\centos7
```



2.5.2 Box ファイルをダウンロード

仮想マシンを作成するため Box ファイル "centos/7" をダウンロードします。今回は途中でプロバイダを確認されたので "3) virtualbox" を選択しました。

```
vagrant box list
vagrant box add centos/7
vagrant box list
```

```
PS C:\Users\user> vagrant box list
There are no installed boxes! Use `vagrant box add` to add some.
PS C:\Users\user>
PS C:\Users\user> vagrant box add centos/7
==> box: Loading metadata for box 'centos/7'
    box: URL: https://vagrantcloud.com/centos/7
This box can work with multiple providers! The providers that it
can work with are listed below. Please review the list and choose
the provider you will be working with.
```

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```
1) hyperv
2) libvirt
3) virtualbox
4) vmware_desktop

Enter your choice: 3
==> box: Adding box 'centos/7' (v1905.1) for provider: virtualbox
      box: Downloading: https://vagrantcloud.com/centos/boxes/7/versions/1905.1/
      ↪providers/virtualbox.box
      box: Download redirected to host: cloud.centos.org
      box:
==> box: Successfully added box 'centos/7' (v1905.1) for 'virtualbox'!
PS C:\Users\user>
PS C:\Users\user> vagrant box list
centos/7 (virtualbox, 1905.1)
PS C:\Users\user>
```

注釈: Box ファイルのダウンロードはファイルのサイズや実行環境などにより数分程度を要します。

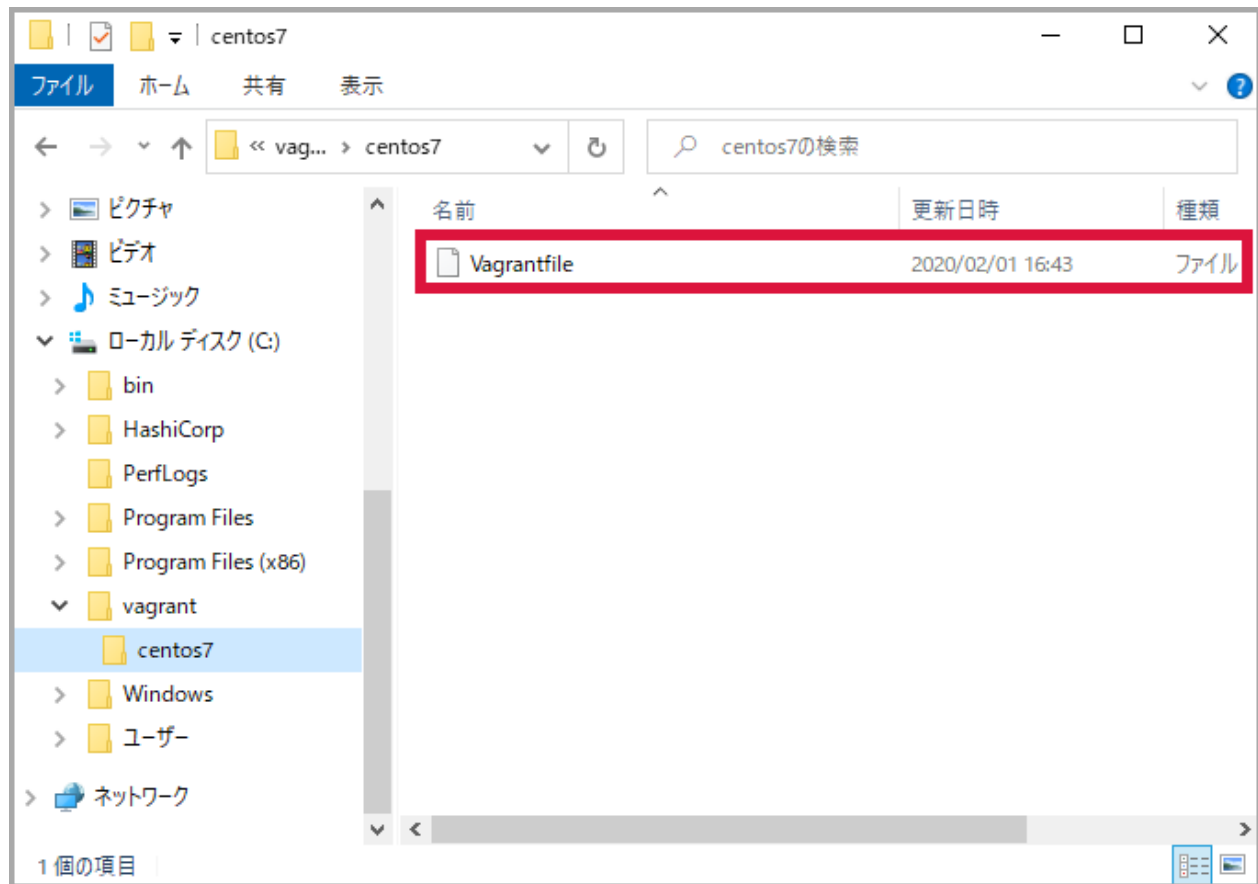
2.5.3 Vagrantfile を作成

作成したフォルダーで Vagrantfile を作成します。

```
cd c:\vagrant\centos7
vagrant init centos/7
```

```
PS C:\Users\user> cd C:\vagrant\centos7\
PS C:\vagrant\centos7>
PS C:\vagrant\centos7> vagrant init centos/7
A `Vagrantfile` has been placed in this directory. You are now
ready to `vagrant up` your first virtual environment! Please read
the comments in the Vagrantfile as well as documentation on
`vagrantup.com` for more information on using Vagrant.
PS C:\vagrant\centos7>
```

フォルダー内に Vagrantfile が作成されました。



2.5.4 仮想マシンを起動

Box ファイルと Vagrant ファイルが揃ったので、仮想マシンを起動します。起動時のメッセージは仮想マシンの状態を示す内容が多く、接続時の参考になります。

```
vagrant up
```

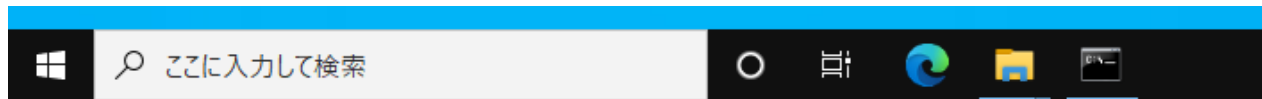
```
PS C:\vagrant\centos7> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: centos7_default_1580909693985_35672
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Booting VM...
```

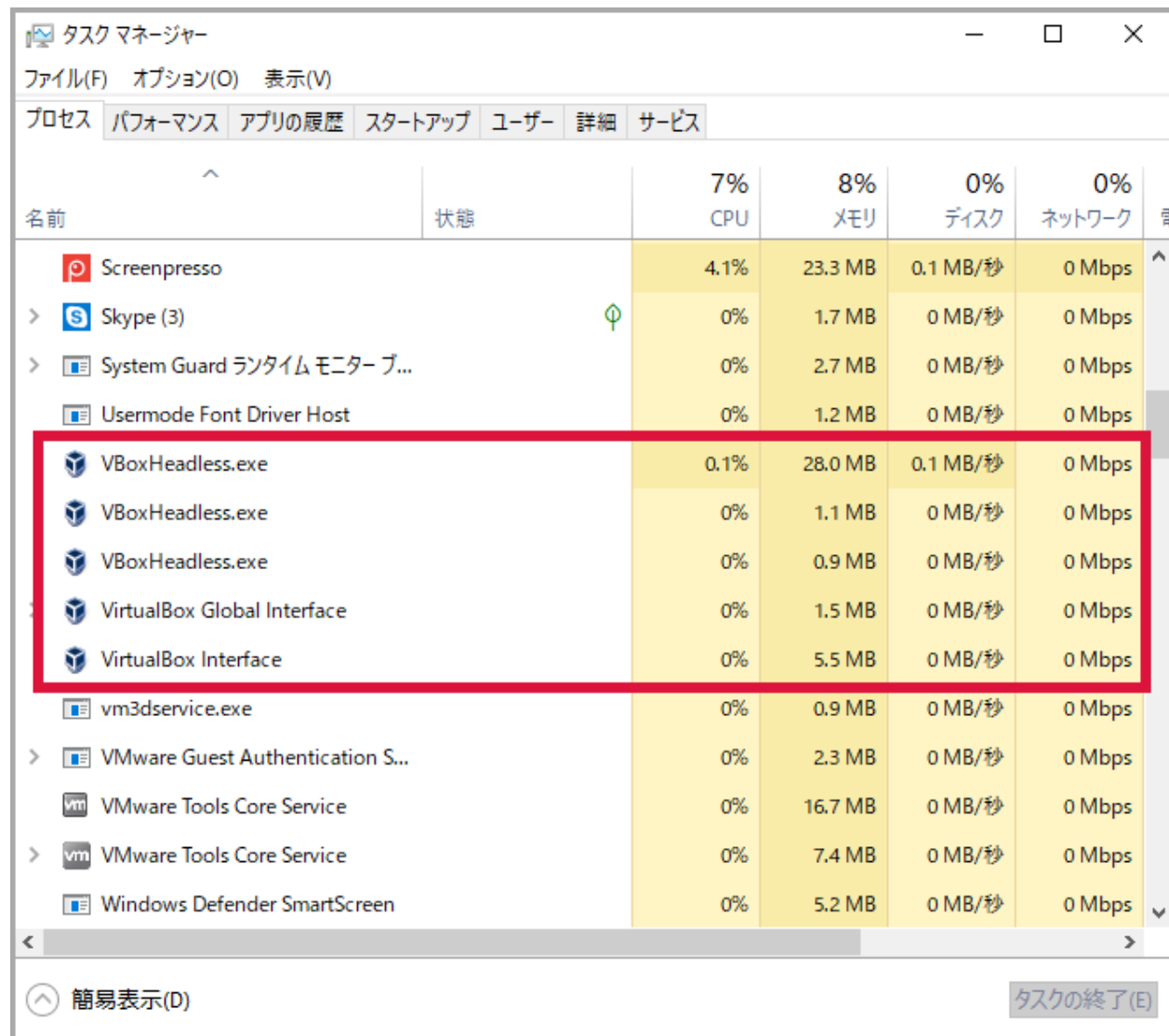
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```
==> default: Waiting for machine to boot. This may take a few minutes...
default: SSH address: 127.0.0.1:2222
default: SSH username: vagrant
default: SSH auth method: private key
default:
default: Vagrant insecure key detected. Vagrant will automatically replace
default: this with a newly generated keypair for better security.
default:
default: Inserting generated public key within guest...
default: Removing insecure key from the guest if it's present...
default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
default: No guest additions were detected on the base box for this VM! Guest
default: additions are required for forwarded ports, shared folders, host only
default: networking, and more. If SSH fails on this machine, please install
default: the guest additions and repackage the box to continue.
default:
default: This is not an error message; everything may continue to work properly,
default: in which case you may ignore this message.
==> default: Rsyncing folder: /cygdrive/c/vagrant/centos7/ => /vagrant
PS C:\vagrant\centos7>
```

プロンプトが表示された時点で VirtualBox は起動していないように見えますが、ヘッドレスモード (バックグラウンドで動作) しています。





タスク マネージャー		7% 8% 0% 0%			
ファイル(F) オプション(O) 表示(V)					
プロセス パフォーマンス アプリの履歴 スタートアップ ユーザー 詳細 サービス					
名前	状態	CPU	メモリ	ディスク	ネットワーク
Screenpresso		4.1%	23.3 MB	0.1 MB/秒	0 Mbps
> Skype (3)		0%	1.7 MB	0 MB/秒	0 Mbps
> System Guard ランタイム モニター ブ...		0%	2.7 MB	0 MB/秒	0 Mbps
Usermode Font Driver Host		0%	1.2 MB	0 MB/秒	0 Mbps
VBoxHeadless.exe		0.1%	28.0 MB	0.1 MB/秒	0 Mbps
VBoxHeadless.exe		0%	1.1 MB	0 MB/秒	0 Mbps
VBoxHeadless.exe		0%	0.9 MB	0 MB/秒	0 Mbps
VirtualBox Global Interface		0%	1.5 MB	0 MB/秒	0 Mbps
VirtualBox Interface		0%	5.5 MB	0 MB/秒	0 Mbps
vm3dservice.exe		0%	0.9 MB	0 MB/秒	0 Mbps
> VMware Guest Authentication S...		0%	2.3 MB	0 MB/秒	0 Mbps
VMware Tools Core Service		0%	16.7 MB	0 MB/秒	0 Mbps
> VMware Tools Core Service		0%	7.4 MB	0 MB/秒	0 Mbps
Windows Defender SmartScreen		0%	5.2 MB	0 MB/秒	0 Mbps

簡易表示(D) タスクの終了(E)

Oracle VM VirtualBox マネージャーを起動すると、仮想マシンが動作していることがわかります。



2.5.5 仮想マシンに接続

仮想マシンが起動したので ssh 接続します。公開鍵認証で接続するためパスワードの入力は不要です。

```
vagrant ssh
```

```
PS C:\vagrant\centos7> vagrant ssh
[vagrant@localhost ~]$
[vagrant@localhost ~]$ hostname
localhost.localdomain
[vagrant@localhost ~]$
[vagrant@localhost ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen_
↪1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 52:54:00:8a:fe:e6 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0
        valid_lft 86290sec preferred_lft 86290sec
    inet6 fe80::5054:ff:fe8a:fee6/64 scope link
        valid_lft forever preferred_lft forever
```

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```
[vagrant@localhost ~]$  
[vagrant@localhost ~]$ logout  
Connection to 127.0.0.1 closed.  
PS C:\vagrant\centos7>
```

2.5.6 仮想マシンを再起動

仮想マシンを再起動します。

```
vagrant reload
```

出力されたメッセージで shutdown → boot していることがわかります。

```
PS C:\vagrant\centos7> vagrant reload  
==> default: Attempting graceful shutdown of VM...  
==> default: Checking if box 'centos/7' version '1905.1' is up to date...  
==> default: Clearing any previously set forwarded ports...  
==> default: Clearing any previously set network interfaces...  
==> default: Preparing network interfaces based on configuration...  
default: Adapter 1: nat  
==> default: Forwarding ports...  
default: 22 (guest) => 2222 (host) (adapter 1)  
==> default: Booting VM...  
==> default: Waiting for machine to boot. This may take a few minutes...  
default: SSH address: 127.0.0.1:2222  
default: SSH username: vagrant  
default: SSH auth method: private key  
default: Warning: Connection reset. Retrying...  
default: Warning: Connection aborted. Retrying...  
default: Warning: Remote connection disconnect. Retrying...  
==> default: Machine booted and ready!  
==> default: Checking for guest additions in VM...  
default: No guest additions were detected on the base box for this VM! Guest  
default: additions are required for forwarded ports, shared folders, host only  
default: networking, and more. If SSH fails on this machine, please install  
default: the guest additions and repack the box to continue.  
default:  
default: This is not an error message; everything may continue to work properly,  
default: in which case you may ignore this message.  
==> default: Rsyncing folder: /cygdrive/c/vagrant/centos7/ => /vagrant  
==> default: Machine already provisioned. Run `vagrant provision` or use the `--  
↪provision`  
==> default: flag to force provisioning. Provisioners marked to run always will still  
↪run.  
PS C:\vagrant\centos7>
```

2.5.7 仮想マシンを停止 (シャットダウン)

仮想マシンを停止 (シャットダウン) します。

```
vagrant halt
```

```
PS C:\vagrant\centos7> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\centos7>
```

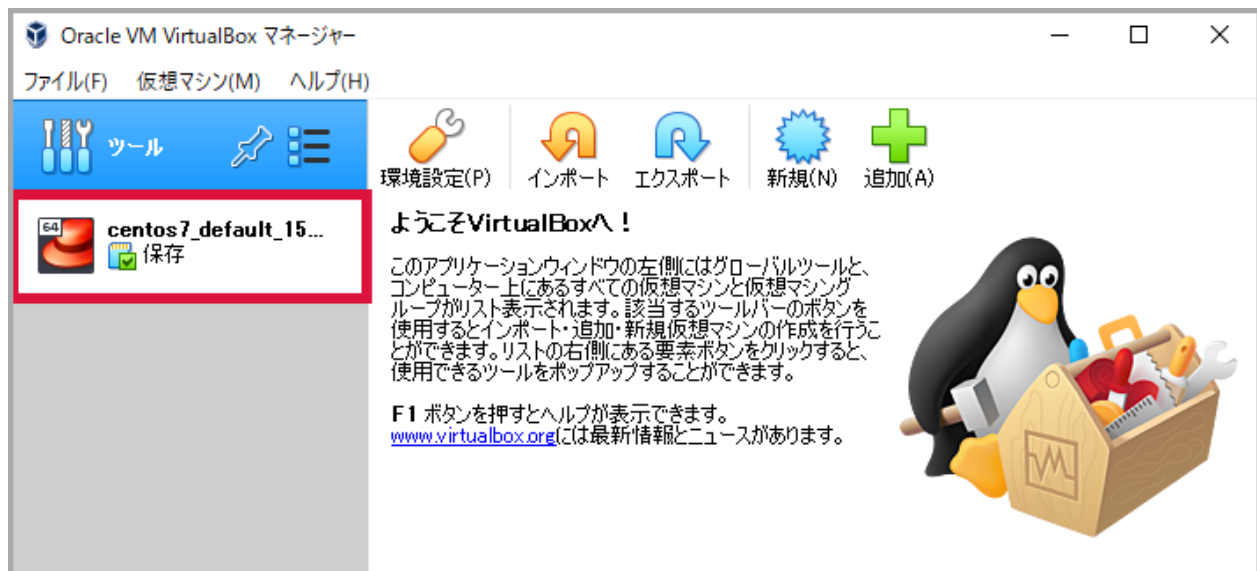
2.5.8 仮想マシンをサスペンド

稼働中の仮想マシンをサスペンドします。

```
vagrant suspend
```

```
PS C:\vagrant\centos7> vagrant suspend
==> default: Saving VM state and suspending execution...
PS C:\vagrant\centos7>
```

Oracle VM VirtualBox マネージャーで確認すると、仮想マシンがサスペンドしていることがわかります。



2.5.9 仮想マシンをリジューム

サスペンド状態の仮想マシンをリジュームします。リジュームするコマンドは2つあります。どちらを実行しても結果は同じです。

```
vagrant up
```

```
PS C:\vagrant\centos7> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Resuming suspended VM...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Machine booted and ready!
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
↪provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
↪run.
PS C:\vagrant\centos7>
```

```
vagrant resume
```

```
PS C:\vagrant\centos7> vagrant resume
==> default: Resuming suspended VM...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Machine booted and ready!
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
↪provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
↪run.
PS C:\vagrant\centos7>
```

2.5.10 仮想マシンの状態を表示

仮想マシンの状態 (poweroff / running / saved) を表示します。

```
vagrant status
vagrant up
vagrant status
vagrant suspend
vagrant status
```

```
PS C:\vagrant\centos7> vagrant status
Current machine states:

default                                poweroff (virtualbox)

The VM is powered off. To restart the VM, simply run `vagrant up`
PS C:\vagrant\centos7>
PS C:\vagrant\centos7> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection aborted. Retrying...
    default: Warning: Remote connection disconnect. Retrying...
    default: Warning: Connection reset. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackage the box to continue.
    default:
    default: This is not an error message; everything may continue to work properly,
    default: in which case you may ignore this message.
==> default: Rsyncing folder: /cygdrive/c/vagrant/centos7/ => /vagrant
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
    ↪provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
    ↪run.
```

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```
PS C:\vagrant\centos7>
PS C:\vagrant\centos7> vagrant status
Current machine states:

default                                running (virtualbox)

The VM is running. To stop this VM, you can run `vagrant halt` to
shut it down forcefully, or you can run `vagrant suspend` to simply
suspend the virtual machine. In either case, to restart it again,
simply run `vagrant up`.
PS C:\vagrant\centos7>
PS C:\vagrant\centos7> vagrant suspend
==> default: Saving VM state and suspending execution...
PS C:\vagrant\centos7>
PS C:\vagrant\centos7> vagrant status
Current machine states:

default                                saved (virtualbox)

To resume this VM, simply run `vagrant up`.
PS C:\vagrant\centos7>
```

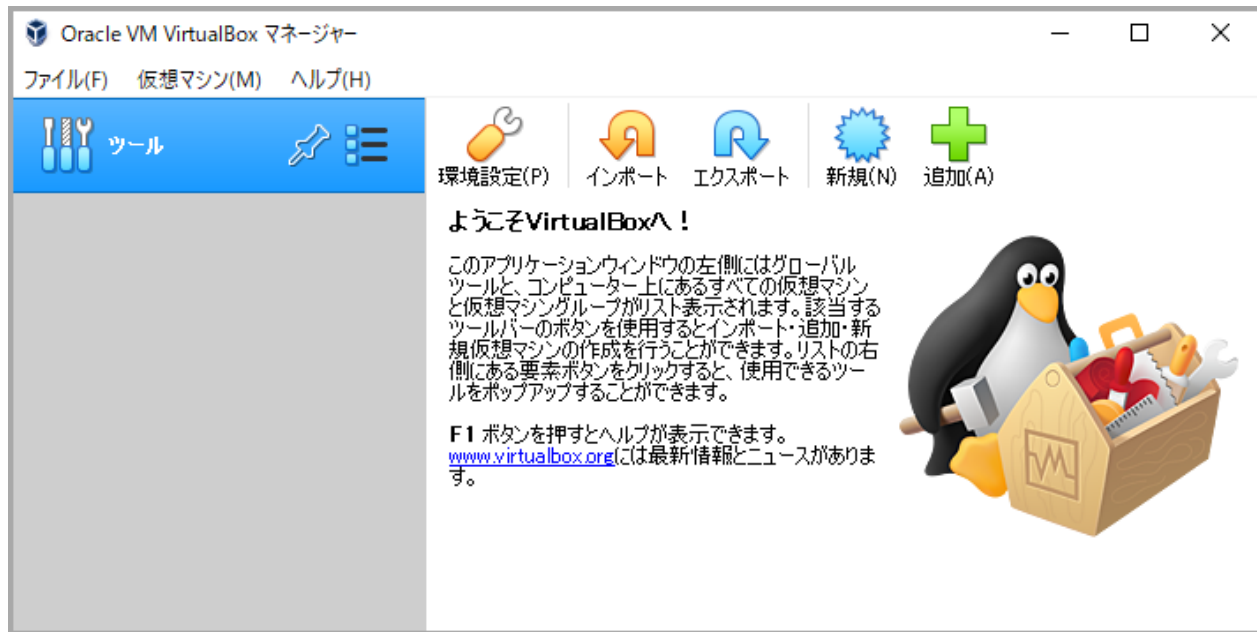
2.5.11 仮想マシンを削除

仮想マシンを削除します。

```
vagrant destroy
```

```
PS C:\vagrant\centos7> vagrant destroy
    default: Are you sure you want to destroy the 'default' VM? [y/N] y
==> default: Destroying VM and associated drives...
PS C:\vagrant\centos7>
```

Oracle VM VirtualBox マネージャーで確認すると、仮想マシンが削除されたことがわかります。



2.5.12 Box ファイルを削除

ダウンロードした Box ファイル "centos/7" を削除します。

```
vagrant box list
vagrant box remove centos/7
vagrant box list
```

```
PS C:\vagrant\centos7> vagrant box list
centos/7 (virtualbox, 1905.1)
PS C:\vagrant\centos7>
PS C:\vagrant\centos7> vagrant box remove centos/7
Box 'centos/7' (v1905.1) with provider 'virtualbox' appears
to still be in use by at least one Vagrant environment. Removing
the box could corrupt the environment. We recommend destroying
these environments first:

default (ID: ec6eabdbc2834c4c813ae0bde08edc95)

Are you sure you want to remove this box? [y/N] y
Removing box 'centos/7' (v1905.1) with provider 'virtualbox'...
PS C:\vagrant\centos7>
PS C:\vagrant\centos7> vagrant box list
There are no installed boxes! Use `vagrant box add` to add some.
PS C:\vagrant\centos7>
```

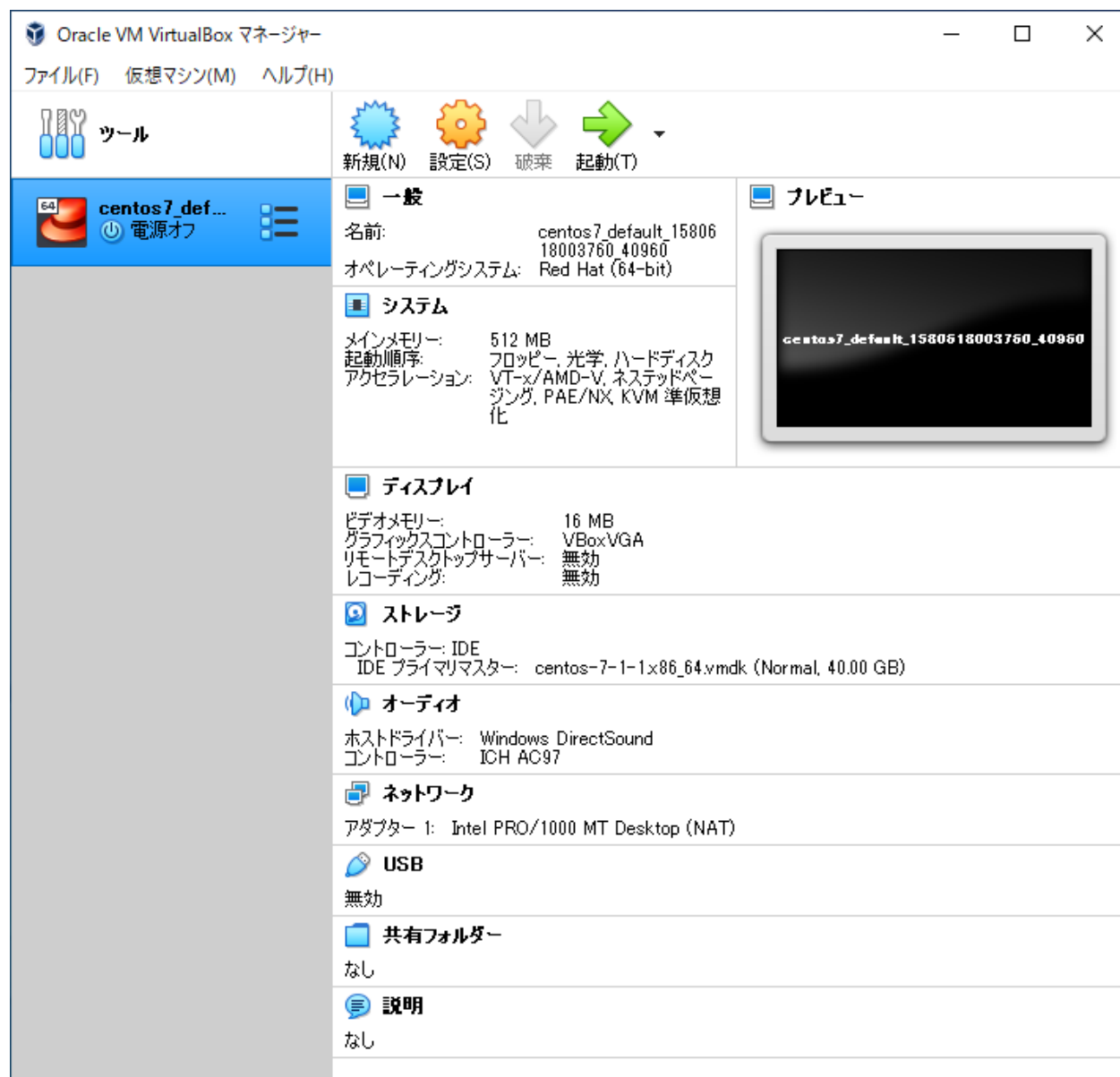
2.6 デフォルトの仮想マシンの仕様

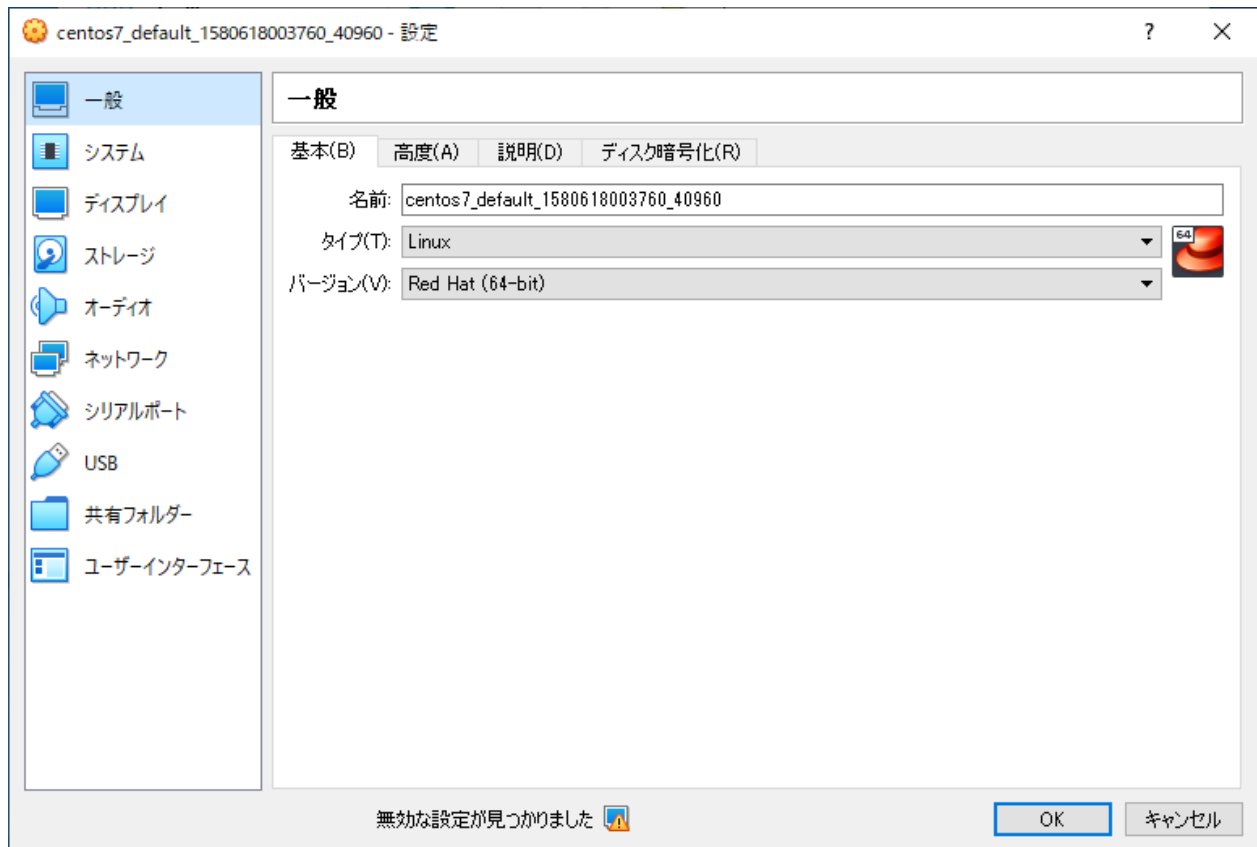
「ウォークスルー」で扱った Box ファイル "centos/7" で作成した仮想マシンを例に、vagrant で作成した仮想マシンの詳細を確認します。

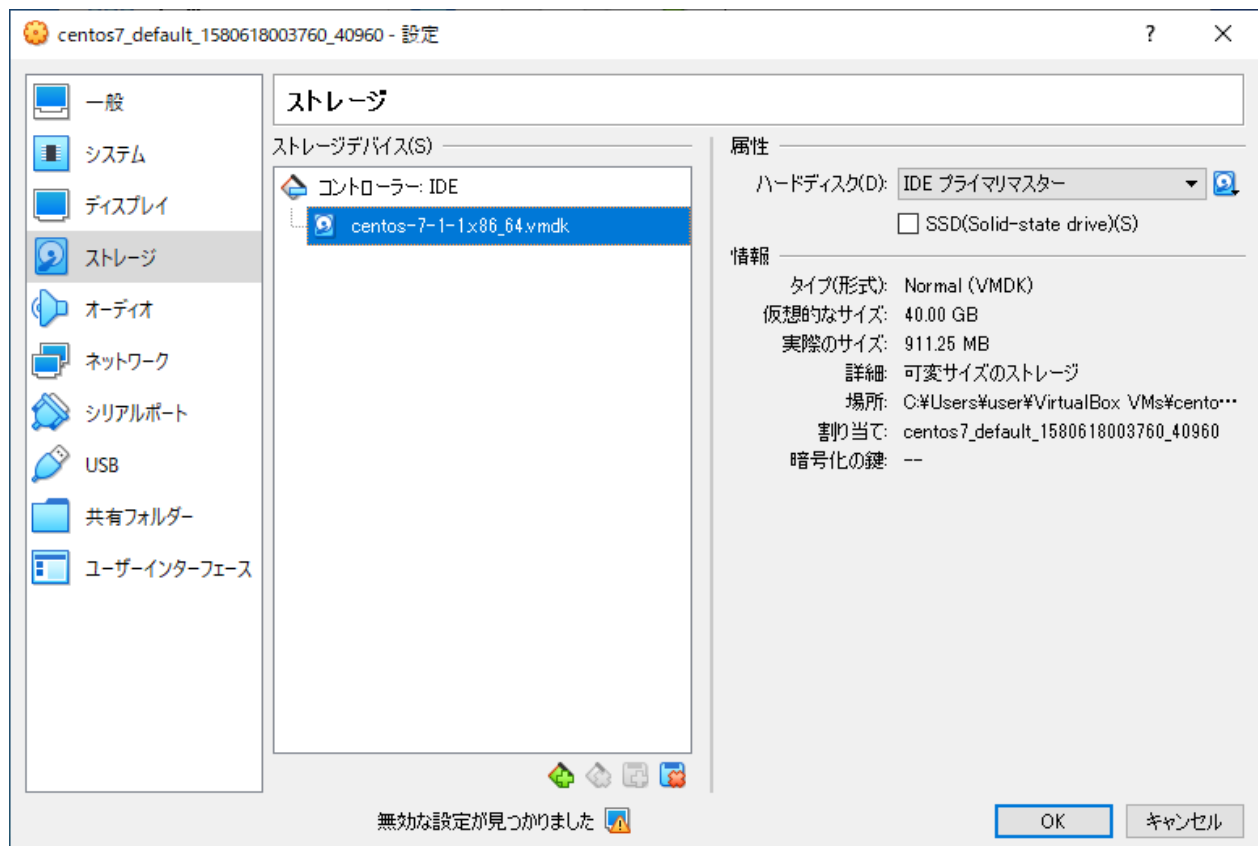
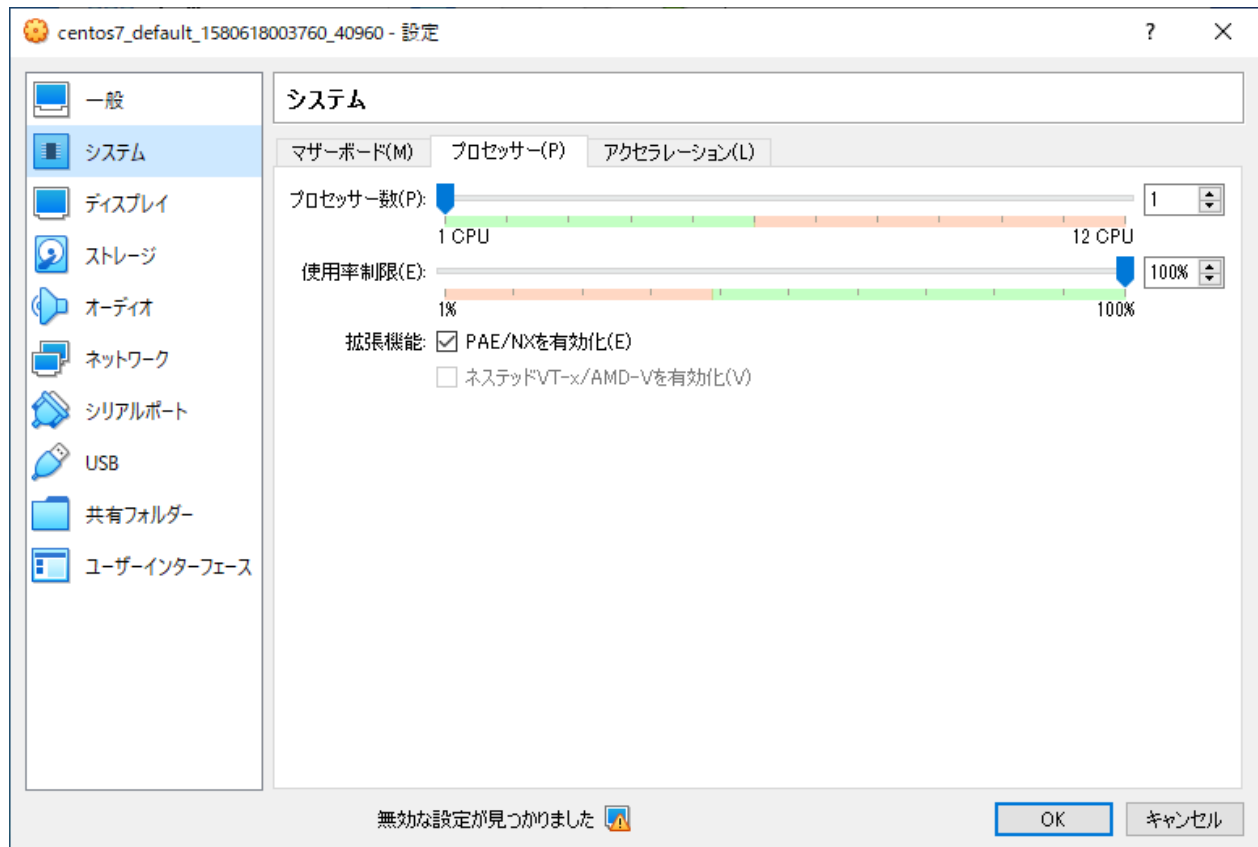
【トピックス】

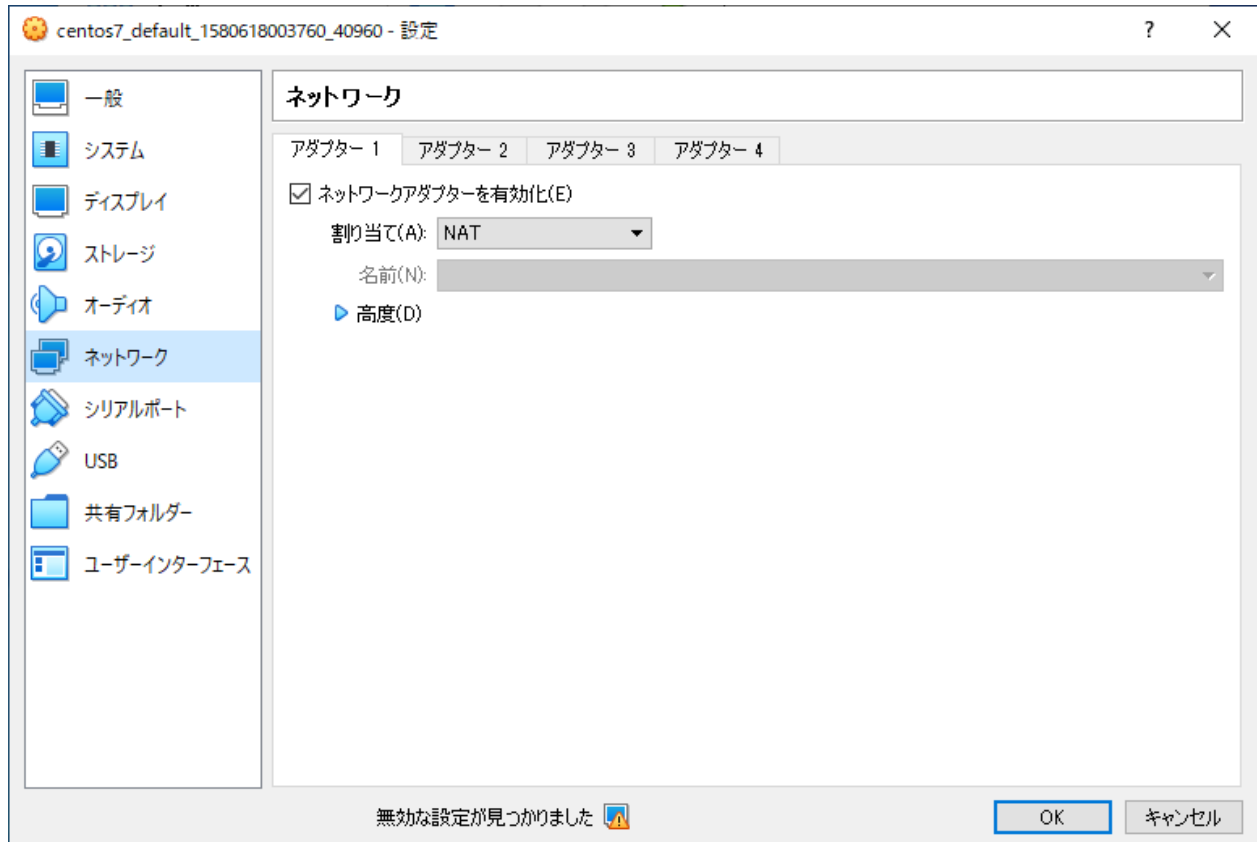
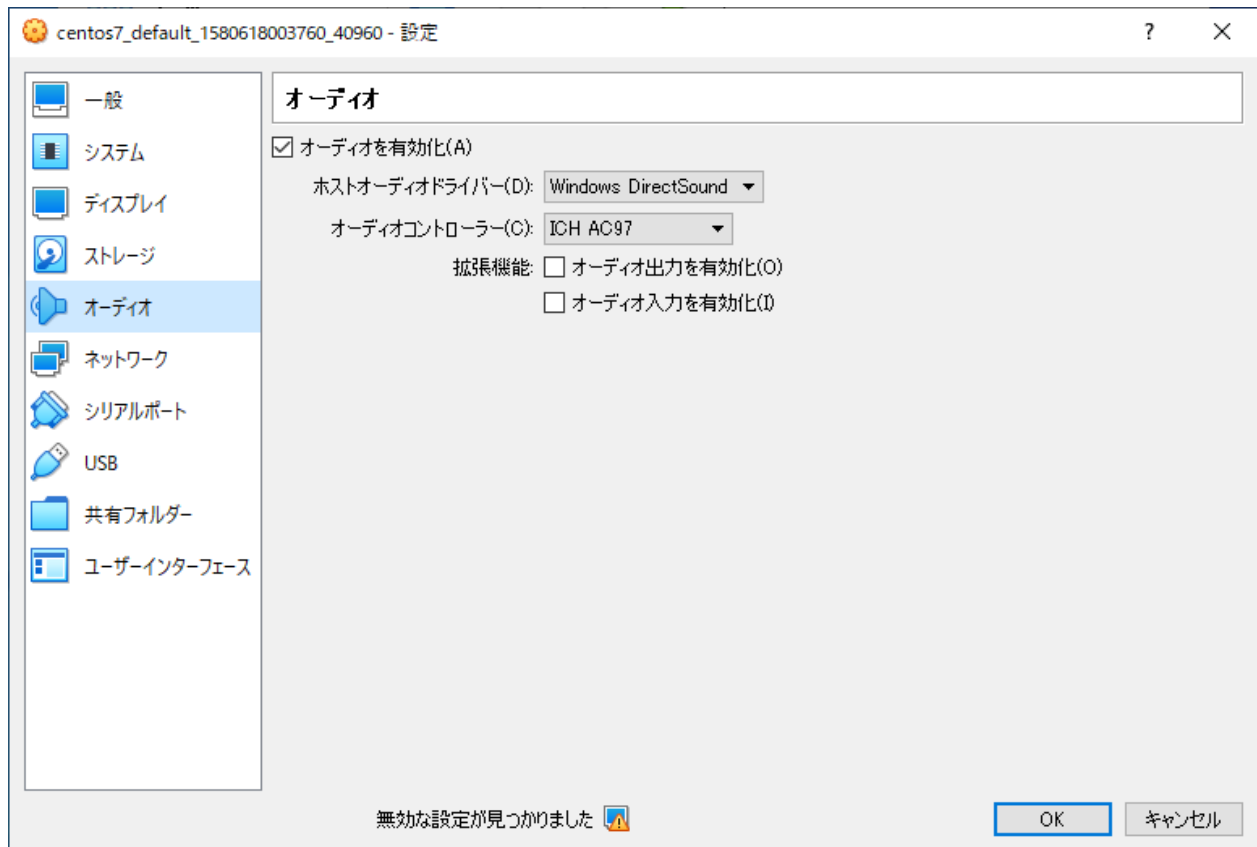
- [仮想マシン自体の仕様](#)
 - [仮想マシンの仕様](#)
-

2.6.1 仮想マシン自体の仕様









2.6.2 仮想マシンの仕様

デフォルトアカウント

- root / vagrant
- vagrant / vagrant

公開鍵認証

- 公開鍵認証だけが有効
- 秘密鍵

```
C:\vagrant\centos7\.vagrant\machines\default\virtualbox\private_key
```

2.7 Vagrantfile の編集

Vagrantfile を編集し、オリジナルの仮想マシンを作成します。

【トピックス】

- オリジナルの *Vagrantfile*
- *Vagrantfile* の構造
- 主なパラメーター
 - *config.vm.box*
 - *config.vm.hostname*
 - *config.vm.network*
 - *vb.name*
 - *vb.gui*
 - *vb.memory*
 - *vb.cpu*
 - *vb.customize*
- *Vagrantfile* の設定例

2.7.1 オリジナルの Vagrantfile

vagrant init コマンドで作成した Vagrantfile の内容です。Box ファイルは "centos/7" です。

```
# -*- mode: ruby -*-
# vi: set ft=ruby :

# All Vagrant configuration is done below. The "2" in Vagrant.configure
# configures the configuration version (we support older styles for
# backwards compatibility). Please don't change it unless you know what
# you're doing.
Vagrant.configure("2") do |config|
  # The most common configuration options are documented and commented below.
  # For a complete reference, please see the online documentation at
  # https://docs.vagrantup.com.

  # Every Vagrant development environment requires a box. You can search for
  # boxes at https://vagrantcloud.com/search.
  config.vm.box = "centos/7"

  # Disable automatic box update checking. If you disable this, then
  # boxes will only be checked for updates when the user runs
  # `vagrant box outdated`. This is not recommended.
  # config.vm.box_check_update = false

  # Create a forwarded port mapping which allows access to a specific port
  # within the machine from a port on the host machine. In the example below,
  # accessing "localhost:8080" will access port 80 on the guest machine.
  # NOTE: This will enable public access to the opened port
  # config.vm.network "forwarded_port", guest: 80, host: 8080

  # Create a forwarded port mapping which allows access to a specific port
  # within the machine from a port on the host machine and only allow access
  # via 127.0.0.1 to disable public access
  # config.vm.network "forwarded_port", guest: 80, host: 8080, host_ip: "127.0.0.1"

  # Create a private network, which allows host-only access to the machine
  # using a specific IP.
  # config.vm.network "private_network", ip: "192.168.33.10"

  # Create a public network, which generally matched to bridged network.
  # Bridged networks make the machine appear as another physical device on
  # your network.
  # config.vm.network "public_network"
```

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```
# Share an additional folder to the guest VM. The first argument is
# the path on the host to the actual folder. The second argument is
# the path on the guest to mount the folder. And the optional third
# argument is a set of non-required options.
# config.vm.synced_folder "../data", "/vagrant_data"

# Provider-specific configuration so you can fine-tune various
# backing providers for Vagrant. These expose provider-specific options.
# Example for VirtualBox:
#
# config.vm.provider "virtualbox" do |vb|
#   # Display the VirtualBox GUI when booting the machine
#   vb.gui = true
#
#   # Customize the amount of memory on the VM:
#   vb.memory = "1024"
# end
#
# View the documentation for the provider you are using for more
# information on available options.

# Enable provisioning with a shell script. Additional provisioners such as
# Ansible, Chef, Docker, Puppet and Salt are also available. Please see the
# documentation for more information about their specific syntax and use.
# config.vm.provision "shell", inline: <<-SHELL
#   apt-get update
#   apt-get install -y apache2
# SHELL
end
```

コメントを除いた内容です。

```
Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
end
```

2.7.2 Vagrantfile の構造

Vagrantfile の構造です。

```
Vagrant.configure("2") do |config|
  パラメーター
end
```

1 行目は Vagrant のどのバージョン用の Vagrantfile なのかを示します。現行の Vagrant は Ver.2 なので 1 行目は次のようになります。

```
Vagrant.configure("2") do |config|
```

2.7.3 主なパラメーター

config.vm.box

- Box ファイル名を指定します。

```
config.vm.box = "centos/7"
```

config.vm.hostname

- 仮想マシンのホスト名を指定する。

```
config.vm.hostname = "node1"
```

config.vm.network

- 仮想マシンのネットワークへの接続形態や IP アドレスを指定します。
- デフォルト (本パラメーターを指定しない) は NAT です。
- 接続形態別設定

- ブリッジ接続 & DHCP

```
config.vm.network "public_network"
```

- ブリッジ接続 & Static IP

```
config.vm.network "public_network", ip "192.168.0.1"
```

- ブリッジ接続 & MAC アドレス指定

```
config.vm.network "public_network", mac: "080027000001"
```

- ブリッジ接続 & MAC アドレス指定 & Static IP

```
config.vm.network "public_network", mac: "080027000001", ip: "192.168.10.1"
```

- 内部ネットワーク & 内部ネットワーク名: intnet (デフォルト) & MAC アドレス指定 & Static IP

```
config.vm.network "private_network", mac: "080027000001", ip: "192.168.10.1",  
↳virtualbox__intnet: true
```

- 内部ネットワーク & 内部ネットワーク名: mynetwork & MAC アドレス指定 & Static IP

```
config.vm.network "private_network", mac: "080027000001", ip: "192.168.10.1",  
↳virtualbox__intnet: "mynetwork"
```

注意:

- VirtualBox の内部ネットワークは DHCP サーバーが存在しない (VirtualBox の仕様) ため、Vagrantfile で static ip を設定する
- VirtualBox の内部ネットワークの VM を起動後に手動で IP アドレスを指定しても Vagrantfile の設定で上書きされる

vb.name

- 仮想マシン名を指定します。

```
config.vm.provider "virtualbox" do |vb|  
  vb.name = "testsv"  
end
```

vb.gui

- VirtualBox の起動モードを指定する。
- 指定がないときはヘッドレスモードで起動する。
- GUI モードで起動 (コンソールを起動) する。

```
config.vm.provider "virtualbox" do |vb|  
  vb.gui = true  
end
```

vb.memory

- 仮想マシンのメモリサイズを MB（メガバイト）で指定します。

```
config.vm.provider "virtualbox" do |vb|
  vb.memory = "1024"
end
```

vb.cpu

- 仮想マシンの CPU の数を指定します。

```
config.vm.provider "virtualbox" do |vb|
  vb.cpus = 2
  vb.customize [
    "modifyvm", :id,
    "--ioapic", "on"
  ]
end
```

vb.customize

- 仮想マシンのカスタマイズを指定します。
- （たぶん）VBoxManage.exe modifyvm で設定できることはこのパラメーターで指定できる（と思う）。

```
config.vm.provider "virtualbox" do |vb|
  vb.customize [
    "modifyvm", :id,
    "--graphicscontroller", "vmsvga"
  ]
end
```

```
PS C:\Program Files\Oracle\VirtualBox> ./VBoxManage.exe modifyvm
```

Usage:

```
VBoxManage modifyvm      <uuid|vmname>
                          [--name <name>]
                          [--groups <group>, ...]
                          [--description <desc>]
                          [--ostype <ostype>]
                          [--iconfile <filename>]
                          [--memory <memorysize in MB>]
                          [--pagefusion on|off]
                          [--vram <vramsize in MB>]
                          [--acpi on|off]
```

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```

[--ioapic on|off]
[--hpet on|off]
[--triplefaultreset on|off]
[--apic on|off]
[--x2apic on|off]
[--paravirtprovider none|default|legacy|minimal|
                    hyperv|kvm]
[--paravirtdebug <key=value> [,<key=value> ...]]
[--hwvirtex on|off]
[--nestedpaging on|off]
[--largepages on|off]
[--vtxvpid on|off]
[--vtxux on|off]
[--pae on|off]
[--longmode on|off]
[--ibpb-on-vm-exit on|off]
[--ibpb-on-vm-entry on|off]
[--spec-ctrl on|off]
[--l1d-flush-on-sched on|off]
[--l1d-flush-on-vm-entry on|off]
[--mds-clear-on-sched on|off]
[--mds-clear-on-vm-entry on|off]
[--nested-hw-virt on|off]
[--cpu-profile "host|Intel 80[86|286|386]" ]
[--cpuid-portability-level <0..3>]
[--cpuid-set <leaf[:subleaf]> <eax> <ebx> <ecx> <edx>]
[--cpuid-remove <leaf[:subleaf]>]
[--cpuidremoveall]
[--hardwareuuid <uuid>]
[--cpus <number>]
[--cpuhotplug on|off]
[--plugcpu <id>]
[--unplugcpu <id>]
[--cpuexecutioncap <1-100>]
[--rtcuseutc on|off]
[--graphicscontroller none|vboxvga|vmsvg|vboxsvg]
[--monitorcount <number>]
[--accelerate3d on|off]
[--accelerate2dvideo on|off]
[--firmware bios|efi|efi32|efi64]
[--chipset ich9|piix3]
[--bioslogofadein on|off]
[--bioslogofadeout on|off]
[--bioslogodisplaytime <msec>]
[--bioslogoimagepath <imagepath>]
[--biosbootmenu disabled|menuonly|messageandmenu]
[--biosapic disabled|apic|x2apic]
[--biossystemtimeoffset <msec>]

```

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```

[--biospxedebg on|off]
[--system-uuid-le on|off]
[--boot<1-4> none|floppy|dvd|disk|net>]
[--nic<1-N> none|null|nat|bridged|intnet|hostonly|
    generic|natnetwork]
[--nictype<1-N> Am79C970A|Am79C973|Am79C960|
    82540EM|82543GC|82545EM|
    virtio]
[--cableconnected<1-N> on|off]
[--nictrace<1-N> on|off]
[--nictracefile<1-N> <filename>]
[--nicproperty<1-N> name=[value]]
[--nicspeed<1-N> <kbps>]
[--nicbootprio<1-N> <priority>]
[--nicpromisc<1-N> deny|allow-vms|allow-all]
[--nicbandwidthgroup<1-N> none|<name>]
[--bridgeadapter<1-N> none|<devicename>]
[--hostonlyadapter<1-N> none|<devicename>]
[--intnet<1-N> <network name>]
[--nat-network<1-N> <network name>]
[--nicgenericdrv<1-N> <driver>]
[--natnet<1-N> <network>|default]
[--natsettings<1-N> [<mtu>],[<socksnd>],
    [<sockrcv>],[<tcpsnd>],
    [<tcpv>]]
[--natpf<1-N> [<rulename>],tcp|udp,[<hostip>],
    <hostport>,[<guestip>],[<guestport>]
[--natpf<1-N> delete <rulename>]
[--nattftpfileprefix<1-N> <prefix>]
[--nattftpfile<1-N> <file>]
[--nattftpserver<1-N> <ip>]
[--natbindip<1-N> <ip>]
[--natdnspassdomain<1-N> on|off]
[--natdnspoxy<1-N> on|off]
[--natdnshostresolver<1-N> on|off]
[--nataliasmode<1-N> default|[log],[proxonly],
    [sameports]]
[--macaddress<1-N> auto|<mac>]
[--mouse ps2|usb|ushtablet|usbmultipoint]
[--keyboard ps2|usb]
[--uart<1-N> off|<I/O base> <IRQ>]
[--uartmode<1-N> disconnected|
    server <pipe>|
    client <pipe>|
    tcpserver <port>|
    tcpclient <hostname:port>|
    file <file>|
    <devicename>]

```

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```

[--uarttype<1-N> 16450|16550A|16750]
[--lpt<1-N> off|<I/O base> <IRQ>]
[--lptmode<1-N> <devicename>]
[--guestmemoryballoon <balloonsize in MB>]
[--vm-process-priority default|flat|low|normal|high]
[--audio none|null|dsound]
[--audioin on|off]
[--audioout on|off]
[--audiocontroller ac97|hda|sb16]
[--audiocodec stac9700|ad1980|stac9221|sb16]
[--clipboard-mode disabled|hosttoguest|guesttohost|
    bidirectional]
[--draganddrop disabled|hosttoguest|guesttohost|
    bidirectional]
[--vrde on|off]
[--vrdeextpack default|<name>]
[--vrdeproperty <name=[value]>]
[--vrdeport <hostport>]
[--vrdeaddress <hostip>]
[--vrdeauthtype null|external|guest]
[--vrdeauthlibrary default|<name>]
[--vrdemulticon on|off]
[--vrdereusecon on|off]
[--vrdevideochannel on|off]
[--vrdevideochannelquality <percent>]
[--usbhci on|off]
[--usbhci on|off]
[--usbhci on|off]
[--usbrename <oldname> <newname>]
[--snapshotfolder default|<path>]
[--teleporter on|off]
[--teleporterport <port>]
[--teleporteraddress <address|empty>]
[--teleporterpassword <password>]
[--teleporterpasswordfile <file>|stdin]
[--tracing-enabled on|off]
[--tracing-config <config-string>]
[--tracing-allow-vm-access on|off]
[--usbcardreader on|off]
[--autostart-enabled on|off]
[--autostart-delay <seconds>]
[--recording on|off]
[--recordingscreens all|<screen ID> [<screen ID> ...]]
[--recordingfile <filename>]
[--recordingvideores <width> <height>]
[--recordingvideorate <rate>]
[--recordingvideofps <fps>]
[--recordingmaxtime <s>]

```

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```

[--recordingmaxsize <MB>]
[--recordingopts <key=value> [,<key=value> ...]]
[--defaultfrontend default|<name>]

```

```
PS C:\Program Files\Oracle\VirtualBox>
```

2.7.4 Vagrantfile の設定例

仮想マシン名	sample-vm
CPU	2
メモリ	4GB(4096MB)
ネットワーク接続	ブリッジ
MAC アドレス	080027000001
ビデオカード	vmsvga
コンソール	表示
ホスト名	node1
IP アドレス	192.168.10.1

```

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001", ip: "192.168.10.1"
  config.vm.hostname = "node1"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "sample-vm"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
end

```

```

PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...

```

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```

==> default: Setting the name of the VM: sample-vm
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackaging the box to continue.
    default:
    default: This is not an error message; everything may continue to work properly,
    default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
PS C:\vagrant\my_centos>
PS C:\vagrant\my_centos> vagrant ssh
[vagrant@node1 ~]$
[vagrant@node1 ~]$ hostname
node1
[vagrant@node1 ~]$
[vagrant@node1 ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen_
↪1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000

```

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```

link/ether 52:54:00:8a:fe:e6 brd ff:ff:ff:ff:ff:ff
inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0
    valid_lft 86348sec preferred_lft 86348sec
inet6 fe80::5054:ff:fe8a:fee6/64 scope link
    valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 08:00:27:00:00:01 brd ff:ff:ff:ff:ff:ff
    inet 192.168.10.1/24 brd 192.168.10.255 scope global noprefixroute eth1
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe00:1/64 scope link
        valid_lft forever preferred_lft forever
[vagrant@node1 ~]$
[vagrant@node1 ~]$ free -h
              total        used        free      shared  buff/cache   available
Mem:           3.7G          106M          3.5G           8.5M          137M          3.4G
Swap:          2.0G           0B           2.0G
[vagrant@node1 ~]$
[vagrant@node1 ~]$ cat /proc/cpuinfo
processor       : 0
vendor_id      : GenuineIntel
cpu family     : 6
model          : 62
model name     : Intel(R) Core(TM) i7-4930K CPU @ 3.40GHz
stepping      : 4
microcode     : 0x19
cpu MHz       : 3402.072
cache size    : 12288 KB
physical id   : 0
siblings      : 2
core id       : 0
cpu cores     : 2
apicid        : 0
initial apicid : 0
fpu           : yes
fpu_exception : yes
cpuid level   : 13
wp            : yes
flags         : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat_
↪pse36 clflush mmx fxsr sse sse2 ht syscall nx rdtscp lm constant_tsc rep_good nopl_
↪xtopology nonstop_tsc eagerfpu pni pclmulqdq ssse3 cx16 pcid sse4_1 sse4_2 x2apic_
↪popcnt aes xsave avx rdrand hypervisor lahf_lm fsgsbase flush_l1d
bogomips      : 6804.14
clflush size  : 64
cache_alignm  : 64
address sizes  : 46 bits physical, 48 bits virtual
power management:

```

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```

processor      : 1
vendor_id     : GenuineIntel
cpu family    : 6
model         : 62
model name    : Intel(R) Core(TM) i7-4930K CPU @ 3.40GHz
stepping      : 4
microcode     : 0x19
cpu MHz       : 3402.072
cache size    : 12288 KB
physical id   : 0
siblings      : 2
core id       : 1
cpu cores     : 2
apicid        : 1
initial apicid : 1
fpu           : yes
fpu_exception : yes
cpuid level   : 13
wp            : yes
flags         : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat_
↳pse36 clflush mmx fxsr sse sse2 ht syscall nx rdtscp lm constant_tsc rep_good nopl_
↳xtopology nonstop_tsc eagerfpu pni pclmulqdq ssse3 cx16 pcid sse4_1 sse4_2 x2apic_
↳popcnt aes xsave avx rdrand hypervisor lahf_lm fsgsbase flush_lld
bogomips      : 6804.14
clflush size  : 64
cache_alignment : 64
address sizes  : 46 bits physical, 48 bits virtual
power management:

[vagrant@node1 ~]$
[vagrant@node1 ~]$ logout
Connection to 127.0.0.1 closed.
PS C:\vagrant\my_centos>
PS C:\vagrant\my_centos> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\my_centos>

```

2.8 プロビジョニング

【トピックス】

- ・ プロビジョニングとは
- ・ 実行タイミング
- ・ 基本動作
- ・ シェル

- ・ インラインスクリプト
 - ・ エクスターナルスクリプト
 - ・ *Ansible*
-

2.8.1 プロビジョニングとは

Vagrantfile と Box ファイルで仮想マシンを作成した後にシェルスクリプトや Ansible などの構成管理ツールを使用し、アプリケーションのインストールや各種設定などの処理を行うことです。処理は `vagrant up` コマンドの一部として動作します。

重要: プロビジョニングの実行はユーザー `vagrant` が `sudo` 付きで実行します。

2.8.2 実行タイミング

プロビジョニングは初回の `vagrant up` コマンドの実行時に動作します。`vagrant up` コマンドや `vagrant reload` コマンドで強制的にプロビジョニングを実行する `--provision` オプションがあります。明示的にプロビジョニングを実行しないようにする `--no-provision` オプションがあります。常にプロビジョニングを実行する方法もあります。

2.8.3 基本動作

プロビジョニングを指定した Vagrantfile です。Linux コマンドを実行するよう設定しました。網掛け部分がプロビジョニングに関係する部分です。

```
$script = <<-'SCRIPT'
echo hello, world
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001", ip: "192.168.10.1"
  config.vm.hostname = "node1"
  config.vm.provider "virtualbox" do |vb|
```

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```

vb.gui = true
vb.name = "sample-vm"
vb.memory = "4096"
vb.cpus = 2
vb.customize [
  "modifyvm", :id,
  "--ioapic", "on",
  "--graphicscontroller", "vmsvga"
]
end
config.vm.provision "shell", inline: $script
end

```

仮想マシンが存在しない状態で `vagrant up`→`vagrant halt`→`vagrant up`→`vagrant halt` を実行した結果です。

```

PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: sample-vm
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackage the box to continue.

```

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```
default:
default: This is not an error message; everything may continue to work properly,
default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: shell...
default: Running: inline script
default: hello, world
PS C:\vagrant\my_centos>
PS C:\vagrant\my_centos> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\my_centos>
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
default: Adapter 1: nat
default: Adapter 2: bridged
==> default: Forwarding ports...
default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
default: SSH address: 127.0.0.1:2222
default: SSH username: vagrant
default: SSH auth method: private key
default: Warning: Remote connection disconnect. Retrying...
default: Warning: Connection aborted. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
default: No guest additions were detected on the base box for this VM! Guest
default: additions are required for forwarded ports, shared folders, host only
default: networking, and more. If SSH fails on this machine, please install
default: the guest additions and repackage the box to continue.
default:
default: This is not an error message; everything may continue to work properly,
default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
    ↳provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
    ↳run.
PS C:\vagrant\my_centos>
```

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```
PS C:\vagrant\my_centos> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\my_centos>
```

vagrant up の実行結果からプロビジョニングの動作確認

初回

プロビジョニングが動作したことがわかります。

```
==> default: Running provisioner: shell...
      default: Running: inline script
      default: hello, world
```

2 回目

プロビジョニング済みなので "Machine already provisioned." と表示されています。

```
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
↳provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
↳run.
```

--provision オプション

2 回目の vagrant up コマンドの実行後に --provision オプションを指定して vagrant up コマンドを実行した結果です。プロビジョニングが動作しました。

```
PS C:\vagrant\my_centos> vagrant up --provision
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
      default: Adapter 1: nat
      default: Adapter 2: bridged
==> default: Forwarding ports...
      default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
      default: SSH address: 127.0.0.1:2222
      default: SSH username: vagrant
```

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```

    default: SSH auth method: private key
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackage the box to continue.
    default:
    default: This is not an error message; everything may continue to work properly,
    default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: shell...
    default: Running: inline script
    default: hello, world
PS C:\vagrant\my_centos>
PS C:\vagrant\my_centos> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\my_centos>

```

プロビジョニングの常時実行

run: "always"を指定すると常にプロビジョニングが動作します。

```

$script = <<-'SCRIPT'
echo hello, world
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001", ip: "192.168.10.1"
  config.vm.hostname = "node1"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "sample-vm"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  config.vm.provision "shell", inline: $script, run: "always"
end

```



```
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackage the box to continue.
    default:
    default: This is not an error message; everything may continue to work properly,
    default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
    ↪provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
    ↪run.
==> default: Running provisioner: shell...
    default: Running: inline script
    default: hello, world
PS C:\vagrant\my_centos>
```

2.8.4 シェル

インラインスクリプト

Vagrantfile 内にスクリプトを記述し、それを実行します。

スクリプトと実行部分です。

```
$script = <<-'SCRIPT'
echo hello, world
echo hello, Vagrant world !
SCRIPT
```

```
config.vm.provision "shell", inline: $script
```

\$script 変数に設定した 1 つ以上のコマンドを順番に実行します。

Vagrantfile の全体です。

```
$script = <<-'SCRIPT'
echo hello, world
echo hello, Vagrant world !
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001", ip: "192.168.10.1"
  config.vm.hostname = "node1"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "sample-vm"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  config.vm.provision "shell", inline: $script
end
```

実行結果です。echo コマンドの実行結果が表示されています。

```
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: sample-vm
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
```

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```

default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
default: SSH address: 127.0.0.1:2222
default: SSH username: vagrant
default: SSH auth method: private key
default:
default: Vagrant insecure key detected. Vagrant will automatically replace
default: this with a newly generated keypair for better security.
default:
default: Inserting generated public key within guest...
default: Removing insecure key from the guest if it's present...
default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
default: No guest additions were detected on the base box for this VM! Guest
default: additions are required for forwarded ports, shared folders, host only
default: networking, and more. If SSH fails on this machine, please install
default: the guest additions and repackaging the box to continue.
default:
default: This is not an error message; everything may continue to work properly,
default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: shell...
default: Running: inline script
default: hello, world
default: hello, Vagrant world !
PS C:\vagrant\my_centos>

```

複数のスクリプトの実行もできます。

```

$script = <<-'SCRIPT'
echo hello, world
SCRIPT
$script2 = <<-'SCRIPT'
echo hello, Vagrant world !
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001", ip: "192.168.10.1"
  config.vm.hostname = "node1"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
  end
end

```

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```
vb.name = "sample-vm"
vb.memory = "4096"
vb.cpus = 2
vb.customize [
  "modifyvm", :id,
  "--ioapic", "on",
  "--graphicscontroller", "vmsvga"
]
end
config.vm.provision "shell", inline: $script
config.vm.provision "shell", inline: $script2
end
```

実行結果です。config.vm.provision が 2 回実行されています。

```
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: sample-vm
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection aborted. Retrying...
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackage the box to continue.
```

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```
default:
  default: This is not an error message; everything may continue to work properly,
  default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: shell...
  default: Running: inline script
  default: hello, world
==> default: Running provisioner: shell...
  default: Running: inline script
  default: hello, Vagrant world !
PS C:\vagrant\my_centos>
```

nginx を使用した Web サーバーを構築する Vagrantfile です。

```
$script = <<-'SCRIPT'
yum -y install epel-release
yum -y install nginx
systemctl start nginx
systemctl enable nginx
systemctl start firewallld
firewall-cmd --add-service=http --permanent
firewall-cmd --reload
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001"
  config.vm.hostname = "web-sv"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "nginx"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  config.vm.provision "shell", inline: $script
end
```

実行結果です。

```
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: nginx
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection reset. Retrying...
    default: Warning: Connection aborted. Retrying...
    default: Warning: Remote connection disconnect. Retrying...
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackage the box to continue.
    default:
    default: This is not an error message; everything may continue to work properly,
    default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: shell...
    default: Running: inline script
    default: Loaded plugins: fastestmirror
    default: Determining fastest mirrors
    default:  * base: ftp.iij.ad.jp
    default:  * extras: ftp.iij.ad.jp
    default:  * updates: ftp.iij.ad.jp
    default: Resolving Dependencies
```

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```

default: --> Running transaction check
default: ---> Package epel-release.noarch 0:7-11 will be installed
default: --> Finished Dependency Resolution
default:
default: Dependencies Resolved
default:
default: _
↪=====
default:  Package                Arch                Version             Repository
Size
default: _
↪=====
default: Installing:
default:  epel-release                noarch              7-11                extras
15 k
default:
default: Transaction Summary
default: _
↪=====
default: Install 1 Package
default: Total download size: 15 k
default: Installed size: 24 k
default: Downloading packages:
default: Public key for epel-release-7-11.noarch.rpm is not installed
default: warning: /var/cache/yum/x86_64/7/extras/packages/epel-release-7-11.noarch.
↪rpm: Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY
default: Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
default: Importing GPG key 0xF4A80EB5:
default:  Userid      : "CentOS-7 Key (CentOS 7 Official Signing Key)
↪<security@centos.org>"
default:  Fingerprint: 6341 ab27 53d7 8a78 a7c2 7bb1 24c6 a8a7 f4a8 0eb5
default:  Package      : centos-release-7-6.1810.2.el7.centos.x86_64 (@anaconda)
default:  From          : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
default: Running transaction check
default: Running transaction test
default: Transaction test succeeded
default: Running transaction
default:   Installing : epel-release-7-11.noarch
1/1
default:
default:   Verifying   : epel-release-7-11.noarch
1/1
default:
default:
default: Installed:
default:  epel-release.noarch 0:7-11
default: Complete!
default: Loaded plugins: fastestmirror

```

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```

default: Loading mirror speeds from cached hostfile
default:  * base: ftp.iij.ad.jp
default:  * epel: nrt.edge.kernel.org
default:  * extras: ftp.iij.ad.jp
default:  * updates: ftp.iij.ad.jp
default: Resolving Dependencies
default: --> Running transaction check
default: ---> Package nginx.x86_64 1:1.16.1-1.el7 will be installed
default: --> Processing Dependency: nginx-all-modules = 1:1.16.1-1.el7 for
↳package: 1:nginx-1.16.1-1.el7.x86_64
default: --> Processing Dependency: nginx-filesystem = 1:1.16.1-1.el7 for package:
↳1:nginx-1.16.1-1.el7.x86_64
default: --> Processing Dependency: nginx-filesystem for package: 1:nginx-1.16.1-1.
↳el7.x86_64
default: --> Processing Dependency: redhat-indexhtml for package: 1:nginx-1.16.1-1.
↳el7.x86_64
default: --> Processing Dependency: system-logos for package: 1:nginx-1.16.1-1.el7.
↳x86_64
default: --> Processing Dependency: libprofiler.so.0() (64bit) for package: 1:nginx-
↳1.16.1-1.el7.x86_64
default: --> Running transaction check
default: ---> Package centos-indexhtml.noarch 0:7-9.el7.centos will be installed
default: ---> Package centos-logos.noarch 0:70.0.6-3.el7.centos will be installed
default: ---> Package gperftools-libs.x86_64 0:2.6.1-1.el7 will be installed
default: ---> Package nginx-all-modules.noarch 1:1.16.1-1.el7 will be installed
default: --> Processing Dependency: nginx-mod-http-image-filter = 1:1.16.1-1.el7
↳for package: 1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-http-perl = 1:1.16.1-1.el7 for
↳package: 1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-http-xslt-filter = 1:1.16.1-1.el7
↳for package: 1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-mail = 1:1.16.1-1.el7 for package:
↳1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-stream = 1:1.16.1-1.el7 for package:
↳1:nginx-all-modules-1.16.1-1.el7.noarch
default: ---> Package nginx-filesystem.noarch 1:1.16.1-1.el7 will be installed
default: --> Running transaction check
default: ---> Package nginx-mod-http-image-filter.x86_64 1:1.16.1-1.el7 will be
↳installed
default: --> Processing Dependency: gd for package: 1:nginx-mod-http-image-filter-
↳1.16.1-1.el7.x86_64
default: --> Processing Dependency: libgd.so.2() (64bit) for package: 1:nginx-mod-
↳http-image-filter-1.16.1-1.el7.x86_64
default: ---> Package nginx-mod-http-perl.x86_64 1:1.16.1-1.el7 will be installed
default: --> Processing Dependency: perl >= 5.006001 for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(:MODULE_COMPAT_5.16.3) for package:
↳1:nginx-mod-http-perl-1.16.1-1.el7.x86_64

```

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```

default: --> Processing Dependency: perl(Exporter) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(XSLoader) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(constant) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(strict) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(warnings) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: libperl.so()(64bit) for package: 1:nginx-mod-
↳http-perl-1.16.1-1.el7.x86_64
default: ---> Package nginx-mod-http-xslt-filter.x86_64 1:1.16.1-1.el7 will be _
↳installed
default: ---> Package nginx-mod-mail.x86_64 1:1.16.1-1.el7 will be installed
default: ---> Package nginx-mod-stream.x86_64 1:1.16.1-1.el7 will be installed
default: --> Running transaction check
default: ---> Package gd.x86_64 0:2.0.35-26.el7 will be installed
default: --> Processing Dependency: libjpeg.so.62(LIBJPEG_6.2)(64bit) for package: _
↳gd-2.0.35-26.el7.x86_64
default: --> Processing Dependency: libjpeg.so.62()(64bit) for package: gd-2.0.35-
↳26.el7.x86_64
default: --> Processing Dependency: libfontconfig.so.1()(64bit) for package: gd-2.
↳0.35-26.el7.x86_64
default: --> Processing Dependency: libXpm.so.4()(64bit) for package: gd-2.0.35-26.
↳el7.x86_64
default: --> Processing Dependency: libX11.so.6()(64bit) for package: gd-2.0.35-26.
↳el7.x86_64
default: ---> Package perl.x86_64 4:5.16.3-294.el7_6 will be installed
default: --> Processing Dependency: perl(Socket) >= 1.3 for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
default: --> Processing Dependency: perl(Scalar::Util) >= 1.10 for package: 4:perl-
↳5.16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl-macros for package: 4:perl-5.16.3-294.el7_
↳6.x86_64
default: --> Processing Dependency: perl(threads::shared) for package: 4:perl-5.16.
↳3-294.el7_6.x86_64
default: --> Processing Dependency: perl(threads) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
default: --> Processing Dependency: perl(Time::Local) for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
default: --> Processing Dependency: perl(Time::HiRes) for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
default: --> Processing Dependency: perl(Storable) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
default: --> Processing Dependency: perl(Socket) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
default: --> Processing Dependency: perl(Scalar::Util) for package: 4:perl-5.16.3-
↳294.el7_6.x86_64

```

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```

default: --> Processing Dependency: perl(Pod::Simple::XHTML) for package: 4:perl-5.
↪16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(Pod::Simple::Search) for package: 4:perl-
↪5.16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(Getopt::Long) for package: 4:perl-5.16.3-
↪294.el7_6.x86_64
default: --> Processing Dependency: perl(Filter::Util::Call) for package: 4:perl-5.
↪16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Temp) for package: 4:perl-5.16.3-
↪294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Spec::Unix) for package: 4:perl-5.
↪16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Spec::Functions) for package:
↪4:perl-5.16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Spec) for package: 4:perl-5.16.3-
↪294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Path) for package: 4:perl-5.16.3-
↪294.el7_6.x86_64
default: --> Processing Dependency: perl(Cwd) for package: 4:perl-5.16.3-294.el7_6.
↪x86_64
default: --> Processing Dependency: perl(Carp) for package: 4:perl-5.16.3-294.el7_
↪6.x86_64
default: ---> Package perl-Exporter.noarch 0:5.68-3.el7 will be installed
default: ---> Package perl-constant.noarch 0:1.27-2.el7 will be installed
default: ---> Package perl-libs.x86_64 4:5.16.3-294.el7_6 will be installed
default: --> Running transaction check
default: ---> Package fontconfig.x86_64 0:2.13.0-4.3.el7 will be installed
default: --> Processing Dependency: fontpackages-filesystem for package:
↪fontconfig-2.13.0-4.3.el7.x86_64
default: --> Processing Dependency: dejavu-sans-fonts for package: fontconfig-2.13.
↪0-4.3.el7.x86_64
default: ---> Package libX11.x86_64 0:1.6.7-2.el7 will be installed
default: --> Processing Dependency: libX11-common >= 1.6.7-2.el7 for package:
↪libX11-1.6.7-2.el7.x86_64
default: --> Processing Dependency: libxcb.so.1() (64bit) for package: libX11-1.6.7-
↪2.el7.x86_64
default: ---> Package libXpm.x86_64 0:3.5.12-1.el7 will be installed
default: ---> Package libjpeg-turbo.x86_64 0:1.2.90-8.el7 will be installed
default: ---> Package perl-Carp.noarch 0:1.26-244.el7 will be installed
default: ---> Package perl-File-Path.noarch 0:2.09-2.el7 will be installed
default: ---> Package perl-File-Temp.noarch 0:0.23.01-3.el7 will be installed
default: ---> Package perl-Filter.x86_64 0:1.49-3.el7 will be installed
default: ---> Package perl-Getopt-Long.noarch 0:2.40-3.el7 will be installed
default: --> Processing Dependency: perl(Pod::Usage) >= 1.14 for package: perl-
↪Getopt-Long-2.40-3.el7.noarch
default: --> Processing Dependency: perl(Text::ParseWords) for package: perl-
↪Getopt-Long-2.40-3.el7.noarch
default: ---> Package perl-PathTools.x86_64 0:3.40-5.el7 will be installed

```

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```

default: ---> Package perl-Pod-Simple.noarch 1:3.28-4.el7 will be installed
default: --> Processing Dependency: perl(Pod::Escapes) >= 1.04 for package: 1:perl-
↳Pod-Simple-3.28-4.el7.noarch
default: --> Processing Dependency: perl(Encode) for package: 1:perl-Pod-Simple-3.
↳28-4.el7.noarch
default: ---> Package perl-Scalar-List-Utils.x86_64 0:1.27-248.el7 will be
↳installed
default: ---> Package perl-Socket.x86_64 0:2.010-4.el7 will be installed
default: ---> Package perl-Storable.x86_64 0:2.45-3.el7 will be installed
default: ---> Package perl-Time-HiRes.x86_64 4:1.9725-3.el7 will be installed
default: ---> Package perl-Time-Local.noarch 0:1.2300-2.el7 will be installed
default: ---> Package perl-macros.x86_64 4:5.16.3-294.el7_6 will be installed
default: ---> Package perl-threads.x86_64 0:1.87-4.el7 will be installed
default: ---> Package perl-threads-shared.x86_64 0:1.43-6.el7 will be installed
default: --> Running transaction check
default: ---> Package dejavu-sans-fonts.noarch 0:2.33-6.el7 will be installed
default: --> Processing Dependency: dejavu-fonts-common = 2.33-6.el7 for package:
↳dejavu-sans-fonts-2.33-6.el7.noarch
default: ---> Package fontpackages-filesystem.noarch 0:1.44-8.el7 will be installed
default: ---> Package libX11-common.noarch 0:1.6.7-2.el7 will be installed
default: ---> Package libxcb.x86_64 0:1.13-1.el7 will be installed
default: --> Processing Dependency: libXau.so.6() (64bit) for package: libxcb-1.13-
↳1.el7.x86_64
default: ---> Package perl-Encode.x86_64 0:2.51-7.el7 will be installed
default: ---> Package perl-Pod-Escapes.noarch 1:1.04-294.el7_6 will be installed
default: ---> Package perl-Pod-Usage.noarch 0:1.63-3.el7 will be installed
default: --> Processing Dependency: perl(Pod::Text) >= 3.15 for package: perl-Pod-
↳Usage-1.63-3.el7.noarch
default: --> Processing Dependency: perl-Pod-Perldoc for package: perl-Pod-Usage-1.
↳63-3.el7.noarch
default: ---> Package perl-Text-ParseWords.noarch 0:3.29-4.el7 will be installed
default: --> Running transaction check
default: ---> Package dejavu-fonts-common.noarch 0:2.33-6.el7 will be installed
default: ---> Package libXau.x86_64 0:1.0.8-2.1.el7 will be installed
default: ---> Package perl-Pod-Perldoc.noarch 0:3.20-4.el7 will be installed
default: --> Processing Dependency: perl(parent) for package: perl-Pod-Perldoc-3.
↳20-4.el7.noarch
default: --> Processing Dependency: perl(HTTP::Tiny) for package: perl-Pod-Perldoc-
↳3.20-4.el7.noarch
default: ---> Package perl-podlators.noarch 0:2.5.1-3.el7 will be installed
default: --> Running transaction check
default: ---> Package perl-HTTP-Tiny.noarch 0:0.033-3.el7 will be installed
default: ---> Package perl-parent.noarch 1:0.225-244.el7 will be installed
default: --> Finished Dependency Resolution
default:
default: Dependencies Resolved
default:
default:
default:

```

```

↳===== (次のページに続く)

```

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default:	Package	Arch	Version	
↪Repository				
default:				
Size				
default:				
↪=====				
default:	Installing:			
↪562 k	default: nginx	x86_64	1:1.16.1-1.el7	epel
	default: Installing for dependencies:			
92 k	default: centos-indexhtml	noarch	7-9.el7.centos	base
21 M	default: centos-logos	noarch	70.0.6-3.el7.centos	base
64 k	default: dejavu-fonts-common	noarch	2.33-6.el7	base
↪1.4 M	default: dejavu-sans-fonts	noarch	2.33-6.el7	base
↪254 k	default: fontconfig	x86_64	2.13.0-4.3.el7	base
↪9.9 k	default: fontpackages-filesystem	noarch	1.44-8.el7	base
↪146 k	default: gd	x86_64	2.0.35-26.el7	base
↪272 k	default: gperftools-libs	x86_64	2.6.1-1.el7	base
↪607 k	default: libX11	x86_64	1.6.7-2.el7	base
↪164 k	default: libX11-common	noarch	1.6.7-2.el7	base
29 k	default: libXau	x86_64	1.0.8-2.1.el7	base
55 k	default: libXpm	x86_64	3.5.12-1.el7	base
↪135 k	default: libjpeg-turbo	x86_64	1.2.90-8.el7	base
↪214 k	default: libxcb	x86_64	1.13-1.el7	base
19 k	default: nginx-all-modules	noarch	1:1.16.1-1.el7	epel
21 k	default: nginx-filesystem	noarch	1:1.16.1-1.el7	epel
30 k	default: nginx-mod-http-image-filter	x86_64	1:1.16.1-1.el7	epel
39 k	default: nginx-mod-http-perl	x86_64	1:1.16.1-1.el7	epel
29 k	default: nginx-mod-http-xslt-filter	x86_64	1:1.16.1-1.el7	epel

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default:	nginx-mod-mail	x86_64	1:1.16.1-1.el7	epel	
57 k					
default:	nginx-mod-stream	x86_64	1:1.16.1-1.el7	epel	
84 k					
default:	perl	x86_64	4:5.16.3-294.el7_6	base	└
↪8.0 M					
default:	perl-Carp	noarch	1.26-244.el7	base	
19 k					
default:	perl-Encode	x86_64	2.51-7.el7	base	└
↪1.5 M					
default:	perl-Exporter	noarch	5.68-3.el7	base	
28 k					
default:	perl-File-Path	noarch	2.09-2.el7	base	
26 k					
default:	perl-File-Temp	noarch	0.23.01-3.el7	base	
56 k					
default:	perl-Filter	x86_64	1.49-3.el7	base	
76 k					
default:	perl-Getopt-Long	noarch	2.40-3.el7	base	
56 k					
default:	perl-HTTP-Tiny	noarch	0.033-3.el7	base	
38 k					
default:	perl-PathTools	x86_64	3.40-5.el7	base	
82 k					
default:	perl-Pod-Escapes	noarch	1:1.04-294.el7_6	base	
51 k					
default:	perl-Pod-Perldoc	noarch	3.20-4.el7	base	
87 k					
default:	perl-Pod-Simple	noarch	1:3.28-4.el7	base	└
↪216 k					
default:	perl-Pod-Usage	noarch	1.63-3.el7	base	
27 k					
default:	perl-Scalar-List-Utils	x86_64	1.27-248.el7	base	
36 k					
default:	perl-Socket	x86_64	2.010-4.el7	base	
49 k					
default:	perl-Storable	x86_64	2.45-3.el7	base	
77 k					
default:	perl-Text-ParseWords	noarch	3.29-4.el7	base	
14 k					
default:	perl-Time-HiRes	x86_64	4:1.9725-3.el7	base	
45 k					
default:	perl-Time-Local	noarch	1.2300-2.el7	base	
24 k					
default:	perl-constant	noarch	1.27-2.el7	base	
19 k					
default:	perl-libs	x86_64	4:5.16.3-294.el7_6	base	└
↪688 k					

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```

default: perl-macros                                x86_64      4:5.16.3-294.el7_6      base
44 k
default: perl-parent                                noarch      1:0.225-244.el7         base
12 k
default: perl-podlators                             noarch      2.5.1-3.el7             base
↪112 k
default: perl-threads                                x86_64      1.87-4.el7              base
49 k
default: perl-threads-shared                        x86_64      1.43-6.el7              base
39 k
default:
default: Transaction Summary
default: ↪
↪=====
default: Install 1 Package (+48 Dependent packages)
default: Total download size: 37 M
default: Installed size: 72 M
default: Downloading packages:
default: warning: /var/cache/yum/x86_64/7/epel/packages/nginx-1.16.1-1.el7.x86_64.
↪rpm: Header V3 RSA/SHA256 Signature, key ID 352c64e5: NOKEY
default: Public key for nginx-1.16.1-1.el7.x86_64.rpm is not installed
default: -----
↪-----
default: Total                                     13 MB/s | 37 MB ↪
↪00:02
default: Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
default: Importing GPG key 0x352C64E5:
default:  Userid      : "Fedora EPEL (7) <epel@fedoraproject.org>"
default:  Fingerprint: 91e9 7d7c 4a5e 96f1 7f3e 888f 6a2f aea2 352c 64e5
default:  Package      : epel-release-7-11.noarch (@extras)
default:  From          : /etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
default: Running transaction check
default: Running transaction test
default: Transaction test succeeded
default: Running transaction
default:   Installing : fontpackages-filesystem-1.44-8.el7.noarch
1/49
default:
default:   Installing : dejavu-fonts-common-2.33-6.el7.noarch
2/49
default:
default:   Installing : dejavu-sans-fonts-2.33-6.el7.noarch
3/49
default:
default:   Installing : fontconfig-2.13.0-4.3.el7.x86_64
4/49
default:
default:   Installing : 1:perl-parent-0.225-244.el7.noarch
5/49

```

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```

default:
default: Installing : perl-HTTP-Tiny-0.033-3.el7.noarch
6/49
default:
default: Installing : perl-podlators-2.5.1-3.el7.noarch
7/49
default:
default: Installing : perl-Pod-Perldoc-3.20-4.el7.noarch
8/49
default:
default: Installing : 1:perl-Pod-Escapes-1.04-294.el7_6.noarch
9/49
default:
default: Installing : perl-Encode-2.51-7.el7.x86_64
↪10/49
default:
default: Installing : perl-Text-ParseWords-3.29-4.el7.noarch
↪11/49
default:
default: Installing : perl-Pod-Usage-1.63-3.el7.noarch
↪12/49
default:
default: Installing : 4:perl-libs-5.16.3-294.el7_6.x86_64
↪13/49
default:
default: Installing : 4:perl-macros-5.16.3-294.el7_6.x86_64
↪14/49
default:
default: Installing : 4:perl-Time-HiRes-1.9725-3.el7.x86_64
↪15/49
default:
default: Installing : perl-Exporter-5.68-3.el7.noarch
↪16/49
default:
default: Installing : perl-constant-1.27-2.el7.noarch
↪17/49
default:
default: Installing : perl-Time-Local-1.2300-2.el7.noarch
↪18/49
default:
default: Installing : perl-Socket-2.010-4.el7.x86_64
↪19/49
default:
default: Installing : perl-Carp-1.26-244.el7.noarch
↪20/49
default:
default: Installing : perl-Storable-2.45-3.el7.x86_64
↪21/49

```

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```

default:
default: Installing : perl-PathTools-3.40-5.el7.x86_64
↪22/49
default:
default: Installing : perl-Scalar-List-Utils-1.27-248.el7.x86_64
↪23/49
default:
default: Installing : 1:perl-Pod-Simple-3.28-4.el7.noarch
↪24/49
default:
default: Installing : perl-File-Temp-0.23.01-3.el7.noarch
↪25/49
default:
default: Installing : perl-File-Path-2.09-2.el7.noarch
↪26/49
default:
default: Installing : perl-threads-shared-1.43-6.el7.x86_64
↪27/49
default:
default: Installing : perl-threads-1.87-4.el7.x86_64
↪28/49
default:
default: Installing : perl-Filter-1.49-3.el7.x86_64
↪29/49
default:
default: Installing : perl-Getopt-Long-2.40-3.el7.noarch
↪30/49
default:
default: Installing : 4:perl-5.16.3-294.el7_6.x86_64
↪31/49
default:
default: Installing : gperftools-libs-2.6.1-1.el7.x86_64
↪32/49
default:
default: Installing : libXau-1.0.8-2.1.el7.x86_64
↪33/49
default:
default: Installing : libxcb-1.13-1.el7.x86_64
↪34/49
default:
default: Installing : centos-indexhtml-7-9.el7.centos.noarch
↪35/49
default:
default: Installing : libjpeg-turbo-1.2.90-8.el7.x86_64
↪36/49
default:
default: Installing : libX11-common-1.6.7-2.el7.noarch
↪37/49

```

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```

default:
default: Installing : libX11-1.6.7-2.el7.x86_64
↪38/49
default:
default: Installing : libXpm-3.5.12-1.el7.x86_64
↪39/49
default:
default: Installing : gd-2.0.35-26.el7.x86_64
↪40/49
default:
default: Installing : centos-logos-70.0.6-3.el7.centos.noarch
↪41/49
default:
default: Installing : 1:nginxfilesystem-1.16.1-1.el7.noarch
↪42/49
default:
default: Installing : 1:nginx-mod-mail-1.16.1-1.el7.x86_64
↪43/49
default:
default: Installing : 1:nginx-mod-stream-1.16.1-1.el7.x86_64
↪44/49
default:
default: Installing : 1:nginx-mod-http-xslt-filter-1.16.1-1.el7.x86_64
↪45/49
default:
default: Installing : 1:nginx-mod-http-image-filter-1.16.1-1.el7.x86_64
↪46/49
default:
default: Installing : 1:nginx-1.16.1-1.el7.x86_64
↪47/49
default:
default: Installing : 1:nginx-mod-http-perl-1.16.1-1.el7.x86_64
↪48/49
default:
default: Installing : 1:nginx-all-modules-1.16.1-1.el7.noarch
↪49/49
default:
default: Verifying : perl-HTTP-Tiny-0.033-3.el7.noarch
1/49
default:
default: Verifying : fontconfig-2.13.0-4.3.el7.x86_64
2/49
default:
default: Verifying : 1:nginxfilesystem-1.16.1-1.el7.noarch
3/49
default:
default: Verifying : perl-threads-shared-1.43-6.el7.x86_64
4/49

```

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```

default:
default:   Verifying   : 4:perl-Time-HiRes-1.9725-3.el7.x86_64
5/49
default:
default:   Verifying   : 1:perl-Pod-Escapes-1.04-294.el7_6.noarch
6/49
default:
default:   Verifying   : perl-Exporter-5.68-3.el7.noarch
7/49
default:
default:   Verifying   : perl-constant-1.27-2.el7.noarch
8/49
default:
default:   Verifying   : perl-PathTools-3.40-5.el7.x86_64
9/49
default:
default:   Verifying   : 1:nginx-mod-mail-1.16.1-1.el7.x86_64
↪10/49
default:
default:   Verifying   : 1:nginx-mod-http-perl-1.16.1-1.el7.x86_64
↪11/49
default:
default:   Verifying   : dejavu-fonts-common-2.33-6.el7.noarch
↪12/49
default:
default:   Verifying   : fontpackages-filesystem-1.44-8.el7.noarch
↪13/49
default:
default:   Verifying   : centos-logos-70.0.6-3.el7.centos.noarch
↪14/49
default:
default:   Verifying   : 1:perl-parent-0.225-244.el7.noarch
↪15/49
default:
default:   Verifying   : perl-Pod-Usage-1.63-3.el7.noarch
↪16/49
default:
default:   Verifying   : 4:perl-libs-5.16.3-294.el7_6.x86_64
↪17/49
default:
default:   Verifying   : perl-File-Temp-0.23.01-3.el7.noarch
↪18/49
default:
default:   Verifying   : 1:perl-Pod-Simple-3.28-4.el7.noarch
↪19/49
default:
default:   Verifying   : libX11-1.6.7-2.el7.x86_64
↪20/49

```

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```

default:
default: Verifying : libX11-common-1.6.7-2.el7.noarch
↪21/49
default:
default: Verifying : libxcb-1.13-1.el7.x86_64
↪22/49
default:
default: Verifying : perl-Time-Local-1.2300-2.el7.noarch
↪23/49
default:
default: Verifying : 4:perl-macros-5.16.3-294.el7_6.x86_64
↪24/49
default:
default: Verifying : perl-Socket-2.010-4.el7.x86_64
↪25/49
default:
default: Verifying : libXpm-3.5.12-1.el7.x86_64
↪26/49
default:
default: Verifying : 1:nginx-mod-stream-1.16.1-1.el7.x86_64
↪27/49
default:
default: Verifying : perl-Carp-1.26-244.el7.noarch
↪28/49
default:
default: Verifying : perl-Storable-2.45-3.el7.x86_64
↪29/49
default:
default: Verifying : dejavu-sans-fonts-2.33-6.el7.noarch
↪30/49
default:
default: Verifying : perl-Scalar-List-Utils-1.27-248.el7.x86_64
↪31/49
default:
default: Verifying : 1:nginx-1.16.1-1.el7.x86_64
↪32/49
default:
default: Verifying : libjpeg-turbo-1.2.90-8.el7.x86_64
↪33/49
default:
default: Verifying : 1:nginx-all-modules-1.16.1-1.el7.noarch
↪34/49
default:
default: Verifying : 1:nginx-mod-http-xslt-filter-1.16.1-1.el7.x86_64
↪35/49
default:
default: Verifying : centos-indexhtml-7-9.el7.centos.noarch
↪36/49

```

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```

default:
default:   Verifying   : 1:nginx-mod-http-image-filter-1.16.1-1.el7.x86_64
↪37/49
default:
default:   Verifying   : perl-Encode-2.51-7.el7.x86_64
↪38/49
default:
default:   Verifying   : perl-Pod-Perldoc-3.20-4.el7.noarch
↪39/49
default:
default:   Verifying   : perl-podlators-2.5.1-3.el7.noarch
↪40/49
default:
default:   Verifying   : libXau-1.0.8-2.1.el7.x86_64
↪41/49
default:
default:   Verifying   : perl-File-Path-2.09-2.el7.noarch
↪42/49
default:
default:   Verifying   : perl-threads-1.87-4.el7.x86_64
↪43/49
default:
default:   Verifying   : gperftools-libs-2.6.1-1.el7.x86_64
↪44/49
default:
default:   Verifying   : perl-Filter-1.49-3.el7.x86_64
↪45/49
default:
default:   Verifying   : perl-Getopt-Long-2.40-3.el7.noarch
↪46/49
default:
default:   Verifying   : perl-Text-ParseWords-3.29-4.el7.noarch
↪47/49
default:
default:   Verifying   : 4:perl-5.16.3-294.el7_6.x86_64
↪48/49
default:
default:   Verifying   : gd-2.0.35-26.el7.x86_64
↪49/49
default:
default:
default: Installed:
default:   nginx.x86_64 1:1.16.1-1.el7
default:
default: Dependency Installed:
default:   centos-indexhtml.noarch 0:7-9.el7.centos
default:   centos-logos.noarch 0:70.0.6-3.el7.centos
default:   dejavu-fonts-common.noarch 0:2.33-6.el7

```

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```

default:  dejavu-sans-fonts.noarch 0:2.33-6.el7
default:  fontconfig.x86_64 0:2.13.0-4.3.el7
default:  fontpackages-filesystem.noarch 0:1.44-8.el7
default:  gd.x86_64 0:2.0.35-26.el7
default:  gperftools-libs.x86_64 0:2.6.1-1.el7
default:  libX11.x86_64 0:1.6.7-2.el7
default:  libX11-common.noarch 0:1.6.7-2.el7
default:  libXau.x86_64 0:1.0.8-2.1.el7
default:  libXpm.x86_64 0:3.5.12-1.el7
default:  libjpeg-turbo.x86_64 0:1.2.90-8.el7
default:  libxcb.x86_64 0:1.13-1.el7
default:  nginx-all-modules.noarch 1:1.16.1-1.el7
default:  nginx-filesystem.noarch 1:1.16.1-1.el7
default:  nginx-mod-http-image-filter.x86_64 1:1.16.1-1.el7
default:  nginx-mod-http-perl.x86_64 1:1.16.1-1.el7
default:  nginx-mod-http-xslt-filter.x86_64 1:1.16.1-1.el7
default:  nginx-mod-mail.x86_64 1:1.16.1-1.el7
default:  nginx-mod-stream.x86_64 1:1.16.1-1.el7
default:  perl.x86_64 4:5.16.3-294.el7_6
default:  perl-Carp.noarch 0:1.26-244.el7
default:  perl-Encode.x86_64 0:2.51-7.el7
default:  perl-Exporter.noarch 0:5.68-3.el7
default:  perl-File-Path.noarch 0:2.09-2.el7
default:  perl-File-Temp.noarch 0:0.23.01-3.el7
default:  perl-Filter.x86_64 0:1.49-3.el7
default:  perl-Getopt-Long.noarch 0:2.40-3.el7
default:  perl-HTTP-Tiny.noarch 0:0.033-3.el7
default:  perl-PathTools.x86_64 0:3.40-5.el7
default:  perl-Pod-Escapes.noarch 1:1.04-294.el7_6
default:  perl-Pod-Perldoc.noarch 0:3.20-4.el7
default:  perl-Pod-Simple.noarch 1:3.28-4.el7
default:  perl-Pod-Usage.noarch 0:1.63-3.el7
default:  perl-Scalar-List-Utils.x86_64 0:1.27-248.el7
default:  perl-Socket.x86_64 0:2.010-4.el7
default:  perl-Storable.x86_64 0:2.45-3.el7
default:  perl-Text-ParseWords.noarch 0:3.29-4.el7
default:  perl-Time-HiRes.x86_64 4:1.9725-3.el7
default:  perl-Time-Local.noarch 0:1.2300-2.el7
default:  perl-constant.noarch 0:1.27-2.el7
default:  perl-libs.x86_64 4:5.16.3-294.el7_6
default:  perl-macros.x86_64 4:5.16.3-294.el7_6
default:  perl-parent.noarch 1:0.225-244.el7
default:  perl-podlators.noarch 0:2.5.1-3.el7
default:  perl-threads.x86_64 0:1.87-4.el7
default:  perl-threads-shared.x86_64 0:1.43-6.el7
default:  Complete!
default:  Created symlink from /etc/systemd/system/multi-user.target.wants/nginx.
↪service to /usr/lib/systemd/system/nginx.service.

```

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```
default: success
default: success
PS C:\vagrant\my_centos>
```

エクスターナルスクリプト

Vagrantfile とは別のファイルにシェルを記述し、そのファイルを実行します。

プロビジョニングで実行するシェルスクリプトです。

```
PS C:\vagrant\my_centos> cat .\provision\nginx.sh
yum -y install epel-release
yum -y install nginx
systemctl start nginx
systemctl enable nginx
systemctl start firewalld
firewall-cmd --add-service=http --permanent
firewall-cmd --reload
PS C:\vagrant\my_centos>
```

Vagrantfile です。path: で実行するシェルスクリプトファイルを指定します。

```
Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001"
  config.vm.hostname = "web-sv"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "nginx"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  config.vm.provision "shell", path: "./provision/nginx.sh"
end
```

実行結果です。

```
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
```

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```
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: nginx
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackaging the box to continue.
    default:
    default: This is not an error message; everything may continue to work properly,
    default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: shell...
    default: Running: C:/Users/user/AppData/Local/Temp/vagrant-shell120200208-16956-
    ↪1flu3hj.sh
    default: Loaded plugins: fastestmirror
    default: Determining fastest mirrors
    default:  * base: ftp.iiij.ad.jp
    default:  * extras: ftp.iiij.ad.jp
    default:  * updates: ftp.iiij.ad.jp
    default: Resolving Dependencies
    default: --> Running transaction check
    default: ---> Package epel-release.noarch 0:7-11 will be installed
    default: --> Finished Dependency Resolution
    default:
    default: Dependencies Resolved
    default:
```

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```

default: _
↪=====
default: Package Arch Version Repository
Size
default: _
↪=====
default: Installing:
default: epel-release noarch 7-11 extras
15 k
default:
default: Transaction Summary
default: _
↪=====
default: Install 1 Package
default:
default: Total download size: 15 k
default: Installed size: 24 k
default: Downloading packages:
default: Public key for epel-release-7-11.noarch.rpm is not installed
default: warning: /var/cache/yum/x86_64/7/extras/packages/epel-release-7-11.noarch.
↪rpm: Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY
default: Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
default: Importing GPG key 0xF4A80EB5:
default: Userid : "CentOS-7 Key (CentOS 7 Official Signing Key)
↪<security@centos.org>"
default: Fingerprint: 6341 ab27 53d7 8a78 a7c2 7bb1 24c6 a8a7 f4a8 0eb5
default: Package : centos-release-7-6.1810.2.el7.centos.x86_64 (@anaconda)
default: From : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
default: Running transaction check
default: Running transaction test
default: Transaction test succeeded
default: Running transaction
default: Installing : epel-release-7-11.noarch
1/1
default:
default: Verifying : epel-release-7-11.noarch
1/1
default:
default:
default: Installed:
default: epel-release.noarch 0:7-11
default: Complete!
default: Loaded plugins: fastestmirror
default: Loading mirror speeds from cached hostfile
default: * base: ftp.iiij.ad.jp
default: * epel: ftp.iiij.ad.jp
default: * extras: ftp.iiij.ad.jp
default: * updates: ftp.iiij.ad.jp

```

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```

default: Resolving Dependencies
default: --> Running transaction check
default: ---> Package nginx.x86_64 1:1.16.1-1.el7 will be installed
default: --> Processing Dependency: nginx-all-modules = 1:1.16.1-1.el7 for
↳package: 1:nginx-1.16.1-1.el7.x86_64
default: --> Processing Dependency: nginx-filesystem = 1:1.16.1-1.el7 for package:
↳1:nginx-1.16.1-1.el7.x86_64
default: --> Processing Dependency: nginx-filesystem for package: 1:nginx-1.16.1-1.
↳el7.x86_64
default: --> Processing Dependency: redhat-indexhtml for package: 1:nginx-1.16.1-1.
↳el7.x86_64
default: --> Processing Dependency: system-logos for package: 1:nginx-1.16.1-1.el7.
↳x86_64
default: --> Processing Dependency: libprofiler.so.0()(64bit) for package: 1:nginx-
↳1.16.1-1.el7.x86_64
default: --> Running transaction check
default: ---> Package centos-indexhtml.noarch 0:7-9.el7.centos will be installed
default: ---> Package centos-logos.noarch 0:70.0.6-3.el7.centos will be installed
default: ---> Package gperftools-libs.x86_64 0:2.6.1-1.el7 will be installed
default: ---> Package nginx-all-modules.noarch 1:1.16.1-1.el7 will be installed
default: --> Processing Dependency: nginx-mod-http-image-filter = 1:1.16.1-1.el7
↳for package: 1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-http-perl = 1:1.16.1-1.el7 for
↳package: 1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-http-xslt-filter = 1:1.16.1-1.el7
↳for package: 1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-mail = 1:1.16.1-1.el7 for package:
↳1:nginx-all-modules-1.16.1-1.el7.noarch
default: --> Processing Dependency: nginx-mod-stream = 1:1.16.1-1.el7 for package:
↳1:nginx-all-modules-1.16.1-1.el7.noarch
default: ---> Package nginx-filesystem.noarch 1:1.16.1-1.el7 will be installed
default: --> Running transaction check
default: ---> Package nginx-mod-http-image-filter.x86_64 1:1.16.1-1.el7 will be
↳installed
default: --> Processing Dependency: gd for package: 1:nginx-mod-http-image-filter-
↳1.16.1-1.el7.x86_64
default: --> Processing Dependency: libgd.so.2()(64bit) for package: 1:nginx-mod-
↳http-image-filter-1.16.1-1.el7.x86_64
default: ---> Package nginx-mod-http-perl.x86_64 1:1.16.1-1.el7 will be installed
default: --> Processing Dependency: perl >= 5.006001 for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(:MODULE_COMPAT_5.16.3) for package:
↳1:nginx-mod-http-perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(Exporter) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(XSLoader) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(constant) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64

```

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```

default: --> Processing Dependency: perl(strict) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: perl(warnings) for package: 1:nginx-mod-http-
↳perl-1.16.1-1.el7.x86_64
default: --> Processing Dependency: libperl.so() (64bit) for package: 1:nginx-mod-
↳http-perl-1.16.1-1.el7.x86_64
default: ---> Package nginx-mod-http-xslt-filter.x86_64 1:1.16.1-1.el7 will be _
↳installed
default: ---> Package nginx-mod-mail.x86_64 1:1.16.1-1.el7 will be installed
default: ---> Package nginx-mod-stream.x86_64 1:1.16.1-1.el7 will be installed
default: --> Running transaction check
default: ---> Package gd.x86_64 0:2.0.35-26.el7 will be installed
default: --> Processing Dependency: libjpeg.so.62(LIBJPEG_6.2) (64bit) for package: _
↳gd-2.0.35-26.el7.x86_64
default: --> Processing Dependency: libjpeg.so.62() (64bit) for package: gd-2.0.35-
↳26.el7.x86_64
default: --> Processing Dependency: libfontconfig.so.1() (64bit) for package: gd-2.
↳0.35-26.el7.x86_64
default: --> Processing Dependency: libXpm.so.4() (64bit) for package: gd-2.0.35-26.
↳el7.x86_64
default: --> Processing Dependency: libX11.so.6() (64bit) for package: gd-2.0.35-26.
↳el7.x86_64
default: ---> Package perl.x86_64 4:5.16.3-294.el7_6 will be installed
default: --> Processing Dependency: perl(Socket) >= 1.3 for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
default: --> Processing Dependency: perl(Scalar::Util) >= 1.10 for package: 4:perl-
↳5.16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl-macros for package: 4:perl-5.16.3-294.el7_
↳6.x86_64
default: --> Processing Dependency: perl(threads::shared) for package: 4:perl-5.16.
↳3-294.el7_6.x86_64
default: --> Processing Dependency: perl(threads) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
default: --> Processing Dependency: perl(Time::Local) for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
default: --> Processing Dependency: perl(Time::HiRes) for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
default: --> Processing Dependency: perl(Storable) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
default: --> Processing Dependency: perl(Socket) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
default: --> Processing Dependency: perl(Scalar::Util) for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
default: --> Processing Dependency: perl(Pod::Simple::XHTML) for package: 4:perl-5.
↳16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(Pod::Simple::Search) for package: 4:perl-
↳5.16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(Getopt::Long) for package: 4:perl-5.16.3-
↳294.el7_6.x86_64

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```

default: --> Processing Dependency: perl(Filter::Util::Call) for package: 4:perl-5.
↪16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Temp) for package: 4:perl-5.16.3-
↪294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Spec::Unix) for package: 4:perl-5.
↪16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Spec::Functions) for package: ↪
↪4:perl-5.16.3-294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Spec) for package: 4:perl-5.16.3-
↪294.el7_6.x86_64
default: --> Processing Dependency: perl(File::Path) for package: 4:perl-5.16.3-
↪294.el7_6.x86_64
default: --> Processing Dependency: perl(Cwd) for package: 4:perl-5.16.3-294.el7_6.
↪x86_64
default: --> Processing Dependency: perl(Carp) for package: 4:perl-5.16.3-294.el7_
↪6.x86_64
default: ---> Package perl-Exporter.noarch 0:5.68-3.el7 will be installed
default: ---> Package perl-constant.noarch 0:1.27-2.el7 will be installed
default: ---> Package perl-libs.x86_64 4:5.16.3-294.el7_6 will be installed
default: --> Running transaction check
default: ---> Package fontconfig.x86_64 0:2.13.0-4.3.el7 will be installed
default: --> Processing Dependency: fontpackages-filesystem for package: ↪
↪fontconfig-2.13.0-4.3.el7.x86_64
default: --> Processing Dependency: dejavu-sans-fonts for package: fontconfig-2.13.
↪0-4.3.el7.x86_64
default: ---> Package libX11.x86_64 0:1.6.7-2.el7 will be installed
default: --> Processing Dependency: libX11-common >= 1.6.7-2.el7 for package: ↪
↪libX11-1.6.7-2.el7.x86_64
default: --> Processing Dependency: libxcb.so.1() (64bit) for package: libX11-1.6.7-
↪2.el7.x86_64
default: ---> Package libXpm.x86_64 0:3.5.12-1.el7 will be installed
default: ---> Package libjpeg-turbo.x86_64 0:1.2.90-8.el7 will be installed
default: ---> Package perl-Carp.noarch 0:1.26-244.el7 will be installed
default: ---> Package perl-File-Path.noarch 0:2.09-2.el7 will be installed
default: ---> Package perl-File-Temp.noarch 0:0.23.01-3.el7 will be installed
default: ---> Package perl-Filter.x86_64 0:1.49-3.el7 will be installed
default: ---> Package perl-Getopt-Long.noarch 0:2.40-3.el7 will be installed
default: --> Processing Dependency: perl(Pod::Usage) >= 1.14 for package: perl-
↪Getopt-Long-2.40-3.el7.noarch
default: --> Processing Dependency: perl(Text::ParseWords) for package: perl-
↪Getopt-Long-2.40-3.el7.noarch
default: ---> Package perl-PathTools.x86_64 0:3.40-5.el7 will be installed
default: ---> Package perl-Pod-Simple.noarch 1:3.28-4.el7 will be installed
default: --> Processing Dependency: perl(Pod::Escapes) >= 1.04 for package: 1:perl-
↪Pod-Simple-3.28-4.el7.noarch
default: --> Processing Dependency: perl(Encode) for package: 1:perl-Pod-Simple-3.
↪28-4.el7.noarch
default: ---> Package perl-Scalar-List-Utils.x86_64 0:1.27-248.el7 will be ↪
↪installed

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```

default: ---> Package perl-Socket.x86_64 0:2.010-4.el7 will be installed
default: ---> Package perl-Storable.x86_64 0:2.45-3.el7 will be installed
default: ---> Package perl-Time-HiRes.x86_64 4:1.9725-3.el7 will be installed
default: ---> Package perl-Time-Local.noarch 0:1.2300-2.el7 will be installed
default: ---> Package perl-macros.x86_64 4:5.16.3-294.el7_6 will be installed
default: ---> Package perl-threads.x86_64 0:1.87-4.el7 will be installed
default: ---> Package perl-threads-shared.x86_64 0:1.43-6.el7 will be installed
default: --> Running transaction check
default: ---> Package dejavu-sans-fonts.noarch 0:2.33-6.el7 will be installed
default: --> Processing Dependency: dejavu-fonts-common = 2.33-6.el7 for package:
↳ dejavu-sans-fonts-2.33-6.el7.noarch
default: ---> Package fontpackages-filesystem.noarch 0:1.44-8.el7 will be installed
default: ---> Package libX11-common.noarch 0:1.6.7-2.el7 will be installed
default: ---> Package libxcb.x86_64 0:1.13-1.el7 will be installed
default: --> Processing Dependency: libXau.so.6()(64bit) for package: libxcb-1.13-
↳ 1.el7.x86_64
default: ---> Package perl-Encode.x86_64 0:2.51-7.el7 will be installed
default: ---> Package perl-Pod-Escapes.noarch 1:1.04-294.el7_6 will be installed
default: ---> Package perl-Pod-Usage.noarch 0:1.63-3.el7 will be installed
default: --> Processing Dependency: perl(Pod::Text) >= 3.15 for package: perl-Pod-
↳ Usage-1.63-3.el7.noarch
default: --> Processing Dependency: perl-Pod-Perldoc for package: perl-Pod-Usage-1.
↳ 63-3.el7.noarch
default: ---> Package perl-Text-ParseWords.noarch 0:3.29-4.el7 will be installed
default: --> Running transaction check
default: ---> Package dejavu-fonts-common.noarch 0:2.33-6.el7 will be installed
default: ---> Package libXau.x86_64 0:1.0.8-2.1.el7 will be installed
default: ---> Package perl-Pod-Perldoc.noarch 0:3.20-4.el7 will be installed
default: --> Processing Dependency: perl(parent) for package: perl-Pod-Perldoc-3.
↳ 20-4.el7.noarch
default: --> Processing Dependency: perl(HTTP::Tiny) for package: perl-Pod-Perldoc-
↳ 3.20-4.el7.noarch
default: ---> Package perl-podlators.noarch 0:2.5.1-3.el7 will be installed
default: --> Running transaction check
default: ---> Package perl-HTTP-Tiny.noarch 0:0.033-3.el7 will be installed
default: ---> Package perl-parent.noarch 1:0.225-244.el7 will be installed
default: --> Finished Dependency Resolution
default:
default: Dependencies Resolved
default:
default:
default:
↳ =====
default: Package                                Arch      Version
↳ Repository
default:
Size
default:
↳ =====

```

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default: Installing:				
default: nginx	x86_64	1:1.16.1-1.el7	epel	↪
↪562 k				
default: Installing for dependencies:				
default: centos-indexhtml	noarch	7-9.el7.centos	base	
92 k				
default: centos-logos	noarch	70.0.6-3.el7.centos	base	
21 M				
default: dejavu-fonts-common	noarch	2.33-6.el7	base	
64 k				
default: dejavu-sans-fonts	noarch	2.33-6.el7	base	↪
↪1.4 M				
default: fontconfig	x86_64	2.13.0-4.3.el7	base	↪
↪254 k				
default: fontpackages-filesystem	noarch	1.44-8.el7	base	↪
↪9.9 k				
default: gd	x86_64	2.0.35-26.el7	base	↪
↪146 k				
default: gperftools-libs	x86_64	2.6.1-1.el7	base	↪
↪272 k				
default: libX11	x86_64	1.6.7-2.el7	base	↪
↪607 k				
default: libX11-common	noarch	1.6.7-2.el7	base	↪
↪164 k				
default: libXau	x86_64	1.0.8-2.1.el7	base	
29 k				
default: libXpm	x86_64	3.5.12-1.el7	base	
55 k				
default: libjpeg-turbo	x86_64	1.2.90-8.el7	base	↪
↪135 k				
default: libxcb	x86_64	1.13-1.el7	base	↪
↪214 k				
default: nginx-all-modules	noarch	1:1.16.1-1.el7	epel	
19 k				
default: nginx-filesystem	noarch	1:1.16.1-1.el7	epel	
21 k				
default: nginx-mod-http-image-filter	x86_64	1:1.16.1-1.el7	epel	
30 k				
default: nginx-mod-http-perl	x86_64	1:1.16.1-1.el7	epel	
39 k				
default: nginx-mod-http-xslt-filter	x86_64	1:1.16.1-1.el7	epel	
29 k				
default: nginx-mod-mail	x86_64	1:1.16.1-1.el7	epel	
57 k				
default: nginx-mod-stream	x86_64	1:1.16.1-1.el7	epel	
84 k				
default: perl	x86_64	4:5.16.3-294.el7_6	base	↪
↪8.0 M				

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default:	perl-Carp	noarch	1.26-244.e17	base	
19 k					
default:	perl-Encode	x86_64	2.51-7.e17	base	└
↪1.5 M					
default:	perl-Exporter	noarch	5.68-3.e17	base	
28 k					
default:	perl-File-Path	noarch	2.09-2.e17	base	
26 k					
default:	perl-File-Temp	noarch	0.23.01-3.e17	base	
56 k					
default:	perl-Filter	x86_64	1.49-3.e17	base	
76 k					
default:	perl-Getopt-Long	noarch	2.40-3.e17	base	
56 k					
default:	perl-HTTP-Tiny	noarch	0.033-3.e17	base	
38 k					
default:	perl-PathTools	x86_64	3.40-5.e17	base	
82 k					
default:	perl-Pod-Escapes	noarch	1:1.04-294.e17_6	base	
51 k					
default:	perl-Pod-Perldoc	noarch	3.20-4.e17	base	
87 k					
default:	perl-Pod-Simple	noarch	1:3.28-4.e17	base	└
↪216 k					
default:	perl-Pod-Usage	noarch	1.63-3.e17	base	
27 k					
default:	perl-Scalar-List-Utils	x86_64	1.27-248.e17	base	
36 k					
default:	perl-Socket	x86_64	2.010-4.e17	base	
49 k					
default:	perl-Storable	x86_64	2.45-3.e17	base	
77 k					
default:	perl-Text-ParseWords	noarch	3.29-4.e17	base	
14 k					
default:	perl-Time-HiRes	x86_64	4:1.9725-3.e17	base	
45 k					
default:	perl-Time-Local	noarch	1.2300-2.e17	base	
24 k					
default:	perl-constant	noarch	1.27-2.e17	base	
19 k					
default:	perl-libs	x86_64	4:5.16.3-294.e17_6	base	└
↪688 k					
default:	perl-macros	x86_64	4:5.16.3-294.e17_6	base	
44 k					
default:	perl-parent	noarch	1:0.225-244.e17	base	
12 k					
default:	perl-podlators	noarch	2.5.1-3.e17		
default:	base				112 k

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```

default:  perl-threads                        x86_64      1.87-4.el7          base
49 k
default:  perl-threads-shared                x86_64      1.43-6.el7          base
39 k
default:
default: Transaction Summary
default:   
 =====
default: Install 1 Package (+48 Dependent packages)
default: Total download size: 37 M
default: Installed size: 72 M
default: Downloading packages:
default: Public key for nginx-all-modules-1.16.1-1.el7.noarch.rpm is not installed
default: warning: /var/cache/yum/x86_64/7/epel/packages/nginx-all-modules-1.16.1-1.
 el7.noarch.rpm: Header V3 RSA/SHA256 Signature, key ID 352c64e5: NOKEY
default: -----
 -----
default: Total                                9.7 MB/s | 37 MB  
 00:03
default: Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
default: Importing GPG key 0x352C64E5:
default:  Userid      : "Fedora EPEL (7) <epel@fedoraproject.org>"
default:  Fingerprint: 91e9 7d7c 4a5e 96f1 7f3e 888f 6a2f aea2 352c 64e5
default:  Package      : epel-release-7-11.noarch (@extras)
default:  From          : /etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
default: Running transaction check
default: Running transaction test
default: Transaction test succeeded
default: Running transaction
default:  Installing : fontpackages-filesystem-1.44-8.el7.noarch
1/49
default:
default:  Installing : dejavu-fonts-common-2.33-6.el7.noarch
2/49
default:
default:  Installing : dejavu-sans-fonts-2.33-6.el7.noarch
3/49
default:
default:  Installing : fontconfig-2.13.0-4.3.el7.x86_64
4/49
default:
default:  Installing : 1:perl-parent-0.225-244.el7.noarch
5/49
default:
default:  Installing : perl-HTTP-Tiny-0.033-3.el7.noarch
6/49
default:
default:  Installing : perl-podlators-2.5.1-3.el7.noarch
7/49

```

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```

default:
default:   Installing : perl-Pod-Perldoc-3.20-4.el7.noarch
8/49
default:
default:   Installing : 1:perl-Pod-Escapes-1.04-294.el7_6.noarch
9/49
default:
default:   Installing : perl-Encode-2.51-7.el7.x86_64
↪10/49
default:
default:   Installing : perl-Text-ParseWords-3.29-4.el7.noarch
↪11/49
default:
default:   Installing : perl-Pod-Usage-1.63-3.el7.noarch
↪12/49
default:
default:   Installing : 4:perl-libs-5.16.3-294.el7_6.x86_64
↪13/49
default:
default:   Installing : 4:perl-macros-5.16.3-294.el7_6.x86_64
↪14/49
default:
default:   Installing : 4:perl-Time-HiRes-1.9725-3.el7.x86_64
↪15/49
default:
default:   Installing : perl-Exporter-5.68-3.el7.noarch
↪16/49
default:
default:   Installing : perl-constant-1.27-2.el7.noarch
↪17/49
default:
default:   Installing : perl-Time-Local-1.2300-2.el7.noarch
↪18/49
default:
default:   Installing : perl-Socket-2.010-4.el7.x86_64
↪19/49
default:
default:   Installing : perl-Carp-1.26-244.el7.noarch
↪20/49
default:
default:   Installing : perl-Storable-2.45-3.el7.x86_64
↪21/49
default:
default:   Installing : perl-PathTools-3.40-5.el7.x86_64
↪22/49
default:
default:   Installing : perl-Scalar-List-Utils-1.27-248.el7.x86_64
↪23/49

```

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```

default:
default: Installing : 1:perl-Pod-Simple-3.28-4.el7.noarch
↪24/49
default:
default: Installing : perl-File-Temp-0.23.01-3.el7.noarch
↪25/49
default:
default: Installing : perl-File-Path-2.09-2.el7.noarch
↪26/49
default:
default: Installing : perl-threads-shared-1.43-6.el7.x86_64
↪27/49
default:
default: Installing : perl-threads-1.87-4.el7.x86_64
↪28/49
default:
default: Installing : perl-Filter-1.49-3.el7.x86_64
↪29/49
default:
default: Installing : perl-Getopt-Long-2.40-3.el7.noarch
↪30/49
default:
default: Installing : 4:perl-5.16.3-294.el7_6.x86_64
↪31/49
default:
default: Installing : gperftools-libs-2.6.1-1.el7.x86_64
↪32/49
default:
default: Installing : libXau-1.0.8-2.1.el7.x86_64
↪33/49
default:
default: Installing : libxcb-1.13-1.el7.x86_64
↪34/49
default:
default: Installing : centos-indexhtml-7-9.el7.centos.noarch
↪35/49
default:
default: Installing : libjpeg-turbo-1.2.90-8.el7.x86_64
↪36/49
default:
default: Installing : libX11-common-1.6.7-2.el7.noarch
↪37/49
default:
default: Installing : libX11-1.6.7-2.el7.x86_64
↪38/49
default:
default: Installing : libXpm-3.5.12-1.el7.x86_64
↪39/49

```

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```

default:
default:   Installing : gd-2.0.35-26.el7.x86_64
↪40/49
default:
default:   Installing : centos-logos-70.0.6-3.el7.centos.noarch
↪41/49
default:
default:   Installing : 1:nginxfilesystem-1.16.1-1.el7.noarch
↪42/49
default:
default:   Installing : 1:nginx-mod-mail-1.16.1-1.el7.x86_64
↪43/49
default:
default:   Installing : 1:nginx-mod-stream-1.16.1-1.el7.x86_64
↪44/49
default:
default:   Installing : 1:nginx-mod-http-xslt-filter-1.16.1-1.el7.x86_64
↪45/49
default:
default:   Installing : 1:nginx-mod-http-image-filter-1.16.1-1.el7.x86_64
↪46/49
default:
default:   Installing : 1:nginx-1.16.1-1.el7.x86_64
↪47/49
default:
default:   Installing : 1:nginx-mod-http-perl-1.16.1-1.el7.x86_64
↪48/49
default:
default:   Installing : 1:nginx-all-modules-1.16.1-1.el7.noarch
↪49/49
default:
default:   Verifying   : perl-HTTP-Tiny-0.033-3.el7.noarch
1/49
default:
default:   Verifying   : fontconfig-2.13.0-4.3.el7.x86_64
2/49
default:
default:   Verifying   : 1:nginxfilesystem-1.16.1-1.el7.noarch
3/49
default:
default:   Verifying   : perl-threads-shared-1.43-6.el7.x86_64
4/49
default:
default:   Verifying   : 4:perl-Time-HiRes-1.9725-3.el7.x86_64
5/49
default:
default:   Verifying   : 1:perl-Pod-Escapes-1.04-294.el7_6.noarch
6/49

```

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(前のページからの続き)

```

default:
default: Verifying : perl-Exporter-5.68-3.el7.noarch
7/49
default:
default: Verifying : perl-constant-1.27-2.el7.noarch
8/49
default:
default: Verifying : perl-PathTools-3.40-5.el7.x86_64
9/49
default:
default: Verifying : 1:nginx-mod-mail-1.16.1-1.el7.x86_64
↪10/49
default:
default: Verifying : 1:nginx-mod-http-perl-1.16.1-1.el7.x86_64
↪11/49
default:
default: Verifying : dejavu-fonts-common-2.33-6.el7.noarch
↪12/49
default:
default: Verifying : fontpackages-filesystem-1.44-8.el7.noarch
↪13/49
default:
default: Verifying : centos-logos-70.0.6-3.el7.centos.noarch
↪14/49
default:
default: Verifying : 1:perl-parent-0.225-244.el7.noarch
↪15/49
default:
default: Verifying : perl-Pod-Usage-1.63-3.el7.noarch
↪16/49
default:
default: Verifying : 4:perl-libs-5.16.3-294.el7_6.x86_64
↪17/49
default:
default: Verifying : perl-File-Temp-0.23.01-3.el7.noarch
↪18/49
default:
default: Verifying : 1:perl-Pod-Simple-3.28-4.el7.noarch
↪19/49
default:
default: Verifying : libX11-1.6.7-2.el7.x86_64
↪20/49
default:
default: Verifying : libX11-common-1.6.7-2.el7.noarch
↪21/49
default:
default: Verifying : libxcb-1.13-1.el7.x86_64
↪22/49

```

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```

default:
default:   Verifying   : perl-Time-Local-1.2300-2.el7.noarch
↪23/49
default:
default:   Verifying   : 4:perl-macros-5.16.3-294.el7_6.x86_64
↪24/49
default:
default:   Verifying   : perl-Socket-2.010-4.el7.x86_64
↪25/49
default:
default:   Verifying   : libXpm-3.5.12-1.el7.x86_64
↪26/49
default:
default:   Verifying   : 1:nginx-mod-stream-1.16.1-1.el7.x86_64
↪27/49
default:
default:   Verifying   : perl-Carp-1.26-244.el7.noarch
↪28/49
default:
default:   Verifying   : perl-Storable-2.45-3.el7.x86_64
↪29/49
default:
default:   Verifying   : dejavu-sans-fonts-2.33-6.el7.noarch
↪30/49
default:
default:   Verifying   : perl-Scalar-List-Utils-1.27-248.el7.x86_64
↪31/49
default:
default:   Verifying   : 1:nginx-1.16.1-1.el7.x86_64
↪32/49
default:
default:   Verifying   : libjpeg-turbo-1.2.90-8.el7.x86_64
↪33/49
default:
default:   Verifying   : 1:nginx-all-modules-1.16.1-1.el7.noarch
↪34/49
default:
default:   Verifying   : 1:nginx-mod-http-xslt-filter-1.16.1-1.el7.x86_64
↪35/49
default:
default:   Verifying   : centos-indexhtml-7-9.el7.centos.noarch
↪36/49
default:
default:   Verifying   : 1:nginx-mod-http-image-filter-1.16.1-1.el7.x86_64
↪37/49
default:
default:   Verifying   : perl-Encode-2.51-7.el7.x86_64
↪38/49

```

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(前のページからの続き)

```

default:
default: Verifying : perl-Pod-Perldoc-3.20-4.el7.noarch
↪39/49
default:
default: Verifying : perl-podlators-2.5.1-3.el7.noarch
↪40/49
default:
default: Verifying : libXau-1.0.8-2.1.el7.x86_64
↪41/49
default:
default: Verifying : perl-File-Path-2.09-2.el7.noarch
↪42/49
default:
default: Verifying : perl-threads-1.87-4.el7.x86_64
↪43/49
default:
default: Verifying : gperftools-libs-2.6.1-1.el7.x86_64
↪44/49
default:
default: Verifying : perl-Filter-1.49-3.el7.x86_64
↪45/49
default:
default: Verifying : perl-Getopt-Long-2.40-3.el7.noarch
↪46/49
default:
default: Verifying : perl-Text-ParseWords-3.29-4.el7.noarch
↪47/49
default:
default: Verifying : 4:perl-5.16.3-294.el7_6.x86_64
↪48/49
default:
default: Verifying : gd-2.0.35-26.el7.x86_64
↪49/49
default:
default:
default: Installed:
default:  nginx.x86_64 1:1.16.1-1.el7
default:
default: Dependency Installed:
default:  centos-indexhtml.noarch 0:7-9.el7.centos
default:  centos-logos.noarch 0:70.0.6-3.el7.centos
default:  dejavu-fonts-common.noarch 0:2.33-6.el7
default:  dejavu-sans-fonts.noarch 0:2.33-6.el7
default:  fontconfig.x86_64 0:2.13.0-4.3.el7
default:  fontpackages-filesystem.noarch 0:1.44-8.el7
default:  gd.x86_64 0:2.0.35-26.el7
default:  gperftools-libs.x86_64 0:2.6.1-1.el7
default:  libX11.x86_64 0:1.6.7-2.el7

```

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```
default:  libX11-common.noarch 0:1.6.7-2.el7
default:  libXau.x86_64 0:1.0.8-2.1.el7
default:  libXpm.x86_64 0:3.5.12-1.el7
default:  libjpeg-turbo.x86_64 0:1.2.90-8.el7
default:  libxcb.x86_64 0:1.13-1.el7
default:  nginx-all-modules.noarch 1:1.16.1-1.el7
default:  nginx-filesystem.noarch 1:1.16.1-1.el7
default:  nginx-mod-http-image-filter.x86_64 1:1.16.1-1.el7
default:  nginx-mod-http-perl.x86_64 1:1.16.1-1.el7
default:  nginx-mod-http-xslt-filter.x86_64 1:1.16.1-1.el7
default:  nginx-mod-mail.x86_64 1:1.16.1-1.el7
default:  nginx-mod-stream.x86_64 1:1.16.1-1.el7
default:  perl.x86_64 4:5.16.3-294.el7_6
default:  perl-Carp.noarch 0:1.26-244.el7
default:  perl-Encode.x86_64 0:2.51-7.el7
default:  perl-Exporter.noarch 0:5.68-3.el7
default:  perl-File-Path.noarch 0:2.09-2.el7
default:  perl-File-Temp.noarch 0:0.23.01-3.el7
default:  perl-Filter.x86_64 0:1.49-3.el7
default:  perl-Getopt-Long.noarch 0:2.40-3.el7
default:  perl-HTTP-Tiny.noarch 0:0.033-3.el7
default:  perl-PathTools.x86_64 0:3.40-5.el7
default:  perl-Pod-Escapes.noarch 1:1.04-294.el7_6
default:  perl-Pod-Perldoc.noarch 0:3.20-4.el7
default:  perl-Pod-Simple.noarch 1:3.28-4.el7
default:  perl-Pod-Usage.noarch 0:1.63-3.el7
default:  perl-Scalar-List-Utils.x86_64 0:1.27-248.el7
default:  perl-Socket.x86_64 0:2.010-4.el7
default:  perl-Storable.x86_64 0:2.45-3.el7
default:  perl-Text-ParseWords.noarch 0:3.29-4.el7
default:  perl-Time-HiRes.x86_64 4:1.9725-3.el7
default:  perl-Time-Local.noarch 0:1.2300-2.el7
default:  perl-constant.noarch 0:1.27-2.el7
default:  perl-libs.x86_64 4:5.16.3-294.el7_6
default:  perl-macros.x86_64 4:5.16.3-294.el7_6
default:  perl-parent.noarch 1:0.225-244.el7
default:  perl-podlators.noarch 0:2.5.1-3.el7
default:  perl-threads.x86_64 0:1.87-4.el7
default:  perl-threads-shared.x86_64 0:1.43-6.el7
default:
default: Complete!
default: Created symlink from /etc/systemd/system/multi-user.target.wants/nginx.
↪service to /usr/lib/systemd/system/nginx.service.
default: success
default: success
PS C:\vagrant\my_centos>
```

2.8.5 Ansible

Ansible を使用してプロビジョニングします。エクスターナルスクリプトと同様に Vagrantfile とは別にプレイブックファイルを用意します。

注釈: プロビジョニング対象の仮想マシンに Ansible がインストールされていないときは自動でインストールされます。

プロビジョニングで実行するプレイブックファイルです。

```
PS C:\vagrant\my_centos> cat .\provision\nginx.yml
---
- hosts: all
  become: yes

  tasks:
    - name: install Nginx
      yum:
        name: nginx
        state: latest
      notify:
        - nginx restart
    - name: firewallld start
      systemd:
        name: firewallld
        enabled: yes
        state: started
    - name: firewallld enable http
      firewallld:
        service: http
        immediate: yes
        permanent: yes
        state: enabled
  handlers:
    - name: nginx service restarted
      systemd:
        name: nginx
        enabled: yes
        state: restarted
      listen:
        - nginx restart
PS C:\vagrant\my_centos>
```

```
config.vm.provision "ansible_local" do |ansible|
  ansible.playbook = "../provision/nginx.yml"
end
```

Vagrantfile の全体です。

```
Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "080027000001"
  config.vm.hostname = "web-sv"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "nginx"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  config.vm.provision "ansible_local" do |ansible|
    ansible.playbook = "../provision/nginx.yml"
  end
end
```

実行結果です。

```
PS C:\vagrant\my_centos> vagrant up
    Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: nginx
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
```

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```

default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
default: No guest additions were detected on the base box for this VM! Guest
default: additions are required for forwarded ports, shared folders, host only
default: networking, and more. If SSH fails on this machine, please install
default: the guest additions and repackage the box to continue.
default:
default: This is not an error message; everything may continue to work properly,
default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: ansible_local...
default: Installing Ansible...
Vagrant has automatically selected the compatibility mode '2.0'
according to the Ansible version installed (2.9.3).

Alternatively, the compatibility mode can be specified in your Vagrantfile:
https://www.vagrantup.com/docs/provisioning/ansible\_common.html#compatibility\_mode
default: Running ansible-playbook...

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [default]

TASK [install Nginx] *****
changed: [default]

TASK [firewalld start] *****
changed: [default]

TASK [firewalld enable http] *****
changed: [default]

RUNNING HANDLER [nginx service restarted] *****
changed: [default]

PLAY RECAP *****
default                : ok=5    changed=4    unreachable=0    failed=0
↳skipped=0    rescued=0    ignored=0

PS C:\vagrant\my_centos>

```

2.9 BOX ファイルの作成

作成した仮想マシンを元に Box ファイルを作成します。作成した Box ファイルを `vagrant box add` コマンドで登録して使用できます。作成した Box ファイルを配布することで、同じ環境を提供できます。

【トピックス】

- ・ *Box* ファイルの元になる仮想マシンの作成
 - ・ *Box* ファイルの作成
 - ・ 作成した *Box* ファイルの使用
-

2.9.1 Box ファイルの元になる仮想マシンの作成

Box ファイルの元になる仮想マシンを作成します。今回は次の Vagrantfile で作成した仮想マシンを使用します。

```
$script = <<-'SCRIPT'
yum -y update
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.network "public_network", mac: "00006C000001"
  config.vm.hostname = "centos7sv"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "centos7.7"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  config.vm.provision "shell", inline: $script
end
```

実行ログです。実行環境に付録で記載した「[プラグインを使用した VB Guest Additions のインストール](#)」を実行済みなので、VB Guest Additions もインストールされます。プロビジョニングですべてのインストール済みパッケージをアップデートしたり、動作確認などもしているのでかなり長い実行ログです。

```
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Setting the name of the VM: centos7.7
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
[default] No Virtualbox Guest Additions installation found.
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirrors.cat.net
 * extras: mirrors.cat.net
 * updates: mirrors.cat.net
Resolving Dependencies
--> Running transaction check
---> Package centos-release.x86_64 0:7-6.1810.2.el7.centos will be updated
---> Package centos-release.x86_64 0:7-7.1908.0.el7.centos will be an update
--> Finished Dependency Resolution

***省略***

Uncompressing VirtualBox 6.1.2 Guest Additions for Linux.....
VirtualBox Guest Additions installer
Copying additional installer modules ...
Installing additional modules ...
VirtualBox Guest Additions: Starting.
VirtualBox Guest Additions: Building the VirtualBox Guest Additions kernel
modules. This may take a while.
VirtualBox Guest Additions: To build modules for other installed kernels, run
```

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```
VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup <version>
VirtualBox Guest Additions: or
VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup all
VirtualBox Guest Additions: Building the modules for kernel
3.10.0-957.12.2.el7.x86_64.
Redirecting to /bin/systemctl start vboxadd.service
Redirecting to /bin/systemctl start vboxadd-service.service
Unmounting Virtualbox Guest Additions ISO from: /mnt
==> default: Checking for guest additions in VM...
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Running provisioner: shell...
    default: Running: inline script
    default: Loaded plugins: fastestmirror
    default: Loading mirror speeds from cached hostfile
    default: * base: mirrors.cat.net
    default: * extras: mirrors.cat.net
    default: * updates: mirrors.cat.net
    default: Resolving Dependencies
    default: --> Running transaction check
    default: ---> Package GeoIP.x86_64 0:1.5.0-13.el7 will be updated

***省略***

    default: yum.noarch 0:3.4.3-163.el7.centos
    default: yum-plugin-fastestmirror.noarch 0:1.1.31-52.el7
    default: yum-utils.noarch 0:1.1.31-52.el7
    default: Complete!
PS C:\vagrant\my_centos> vagrant reload
==> default: Attempting graceful shutdown of VM...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Machine booted and ready!
[default] GuestAdditions 6.1.2 running --- OK.
==> default: Checking for guest additions in VM...
```

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```

==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
↳provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
↳run.
PS C:\vagrant\my_centos> vagrant ssh
[vagrant@centos7sv ~]$ hostname
centos7sv
[vagrant@centos7sv ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen
↳1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group
↳default qlen 1000
    link/ether 52:54:00:8a:fe:e6 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0
        valid_lft 86366sec preferred_lft 86366sec
    inet6 fe80::5054:ff:fe8a:fee6/64 scope link
        valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group
↳default qlen 1000
    link/ether 00:00:6c:00:00:01 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.37/24 brd 192.168.1.255 scope global noprefixroute dynamic eth1
        valid_lft 14366sec preferred_lft 14366sec
    inet6 fe80::200:6cff:fe00:1/64 scope link
        valid_lft forever preferred_lft forever
[vagrant@centos7sv ~]$ free -h
              total        used        free      shared  buff/cache   available
Mem:           3.7G         134M         3.4G          8.5M        150M         3.4G
Swap:          2.0G           0B         2.0G
[vagrant@centos7sv ~]$ cat /proc/cpuinfo
processor       : 0
vendor_id      : GenuineIntel
cpu family     : 6
model          : 62
model name     : Intel(R) Core(TM) i7-4930K CPU @ 3.40GHz
stepping      : 4
microcode     : 0x19
cpu MHz        : 3402.072
cache size     : 12288 KB
physical id    : 0
siblings       : 2

```

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```

core id      : 0
cpu cores   : 2
apicid      : 0
initial apicid : 0
fpu         : yes
fpu_exception : yes
cpuid level : 13
wp          : yes
flags       : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat_
↳pse36 clflush mmx fxsr sse sse2 ht
syscall nx rdtscp lm constant_tsc rep_good nopl xtopology nonstop_tsc eagerfpu pni_
↳pclmulqdq ssse3 cx16 pcid sse4_1 s
se4_2 x2apic popcnt aes xsave avx rdrand hypervisor lahf_lm fsgsbase flush_lld
bogomips    : 6804.14
clflush size : 64
cache_alignment : 64
address sizes : 46 bits physical, 48 bits virtual
power management:

processor    : 1
vendor_id   : GenuineIntel
cpu family   : 6
model       : 62
model name   : Intel(R) Core(TM) i7-4930K CPU @ 3.40GHz
stepping    : 4
microcode   : 0x19
cpu MHz     : 3402.072
cache size  : 12288 KB
physical id  : 0
siblings    : 2
core id     : 1
cpu cores   : 2
apicid      : 1
initial apicid : 1
fpu         : yes
fpu_exception : yes
cpuid level : 13
wp          : yes
flags       : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat_
↳pse36 clflush mmx fxsr sse sse2 ht
syscall nx rdtscp lm constant_tsc rep_good nopl xtopology nonstop_tsc eagerfpu pni_
↳pclmulqdq ssse3 cx16 pcid sse4_1 s
se4_2 x2apic popcnt aes xsave avx rdrand hypervisor lahf_lm fsgsbase flush_lld
bogomips    : 6804.14
clflush size : 64
cache_alignment : 64
address sizes : 46 bits physical, 48 bits virtual
power management:

```

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```
[vagrant@centos7sv ~]$ logout
Connection to 127.0.0.1 closed.
PS C:\vagrant\my_centos> ssh vagrant@192.168.1.37 -i C:\vagrant\my_centos\.vagrant\
↳ machines\default\virtualbox\private_key
The authenticity of host '192.168.1.37 (192.168.1.37)' can't be established.
ECDSA key fingerprint is SHA256:OGvzBcMkU+p1UVib5Vlu6adTUK1VQC1L8Wb2/xogZEY.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.37' (ECDSA) to the list of known hosts.
Last login: Tue Feb 11 03:21:47 2020 from 10.0.2.2
[vagrant@centos7sv ~]$ logout
Connection to 192.168.1.37 closed.
PS C:\vagrant\my_centos> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\my_centos>
```

2.9.2 Box ファイルの作成

「[Box ファイルの元になる仮想マシンの作成](#)」で作成した仮想マシンを元に `vagrant package` コマンドで Box ファイルを作成します。

主なオプション

- | | |
|----------------------|--|
| --output | • Box ファイル名を指定します。 |
| | • このオプションを省略したときの Box ファイル名は "package.box" です。 |
| --vagrantfile | • 指定した Vagrantfile を取り込んだ Box ファイルを作成します。 |

使用例

オプションなし

```
PS C:\vagrant\my_centos> vagrant package
==> default: Clearing any previously set forwarded ports...
==> default: Exporting VM...
==> default: Compressing package to: C:/vagrant/my_centos/package.box
PS C:\vagrant\my_centos> ls
```

ディレクトリ: C:\vagrant\my_centos

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```

Mode                LastWriteTime         Length Name
----                -
d-----          2020/02/11      12:09             .vagrant
-a-----          2020/02/11      13:19    1071263024 package.box
-a-----          2020/02/11      11:59         515 Vagrantfile

PS C:\vagrant\my_centos>

```

--output オプション

```

PS C:\vagrant\my_centos> vagrant package --output mycentos7.box
==> default: Exporting VM...
==> default: Compressing package to: C:/vagrant/my_centos/mycentos7.box
PS C:\vagrant\my_centos> ls

```

ディレクトリ: C:\vagrant\my_centos

```

Mode                LastWriteTime         Length Name
----                -
d-----          2020/02/11      12:09             .vagrant
-a-----          2020/02/11      13:22    1071262843 mycentos7.box
-a-----          2020/02/11      11:59         515 Vagrantfile

PS C:\vagrant\my_centos>

```

--output オプションと --vagrantfile オプション

```

PS C:\vagrant\my_centos> vagrant package --output mycentos7-custom.box --vagrantfile .\
↪Vagrantfile
==> default: Exporting VM...
==> default: Compressing package to: C:/vagrant/my_centos/mycentos7-custom.box
==> default: Packaging additional file: .\Vagrantfile
PS C:\vagrant\my_centos> ls

```

ディレクトリ: C:\vagrant\my_centos

```

Mode                LastWriteTime         Length Name
----                -

```

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```
d-----      2020/02/11      12:09                .vagrant
-a-----      2020/02/11      13:25      1071263119 mycentos7-custom.box
-a-----      2020/02/11      11:59                515 Vagrantfile
```

```
PS C:\vagrant\my_centos>
```

2.9.3 作成した Box ファイルの使用

作成した Box ファイルを実際に使用します。

Box ファイルの登録

Box ファイルを使用するため `vagrant box add` コマンドで登録します。Vagrant Cloud から Box ファイルを取得する場合とは違い、作成した Box ファイルの指定が必要です。今回は `mycentos` と `mycentos-custom` という名称で作成した Box ファイルを登録します。

```
PS C:\vagrant\my_centos> ls
```

```
ディレクトリ: C:\vagrant\my_centos
```

```
Mode                LastWriteTime         Length Name
----                -
d-----      2020/02/11      12:09                .vagrant
-a-----      2020/02/11      13:25      1071263119 mycentos7-custom.box
-a-----      2020/02/11      13:22      1071262843 mycentos7.box
-a-----      2020/02/11      13:19      1071263024 package.box
-a-----      2020/02/11      11:59                515 Vagrantfile
```

```
PS C:\vagrant\my_centos> vagrant box list
```

```
centos/7 (virtualbox, 1905.1)
```

```
PS C:\vagrant\my_centos>
```

```
PS C:\vagrant\my_centos> vagrant box add mycentos package.box
```

```
==> box: Box file was not detected as metadata. Adding it directly...
```

```
==> box: Adding box 'mycentos' (v0) for provider:
```

```
    box: Unpacking necessary files from: file://C:/vagrant/my_centos/package.box
```

```
    box:
```

```
==> box: Successfully added box 'mycentos' (v0) for 'virtualbox'!
```

```
PS C:\vagrant\my_centos>
```

```
PS C:\vagrant\my_centos> vagrant box add mycentos-custom .\mycentos7-custom.box
```

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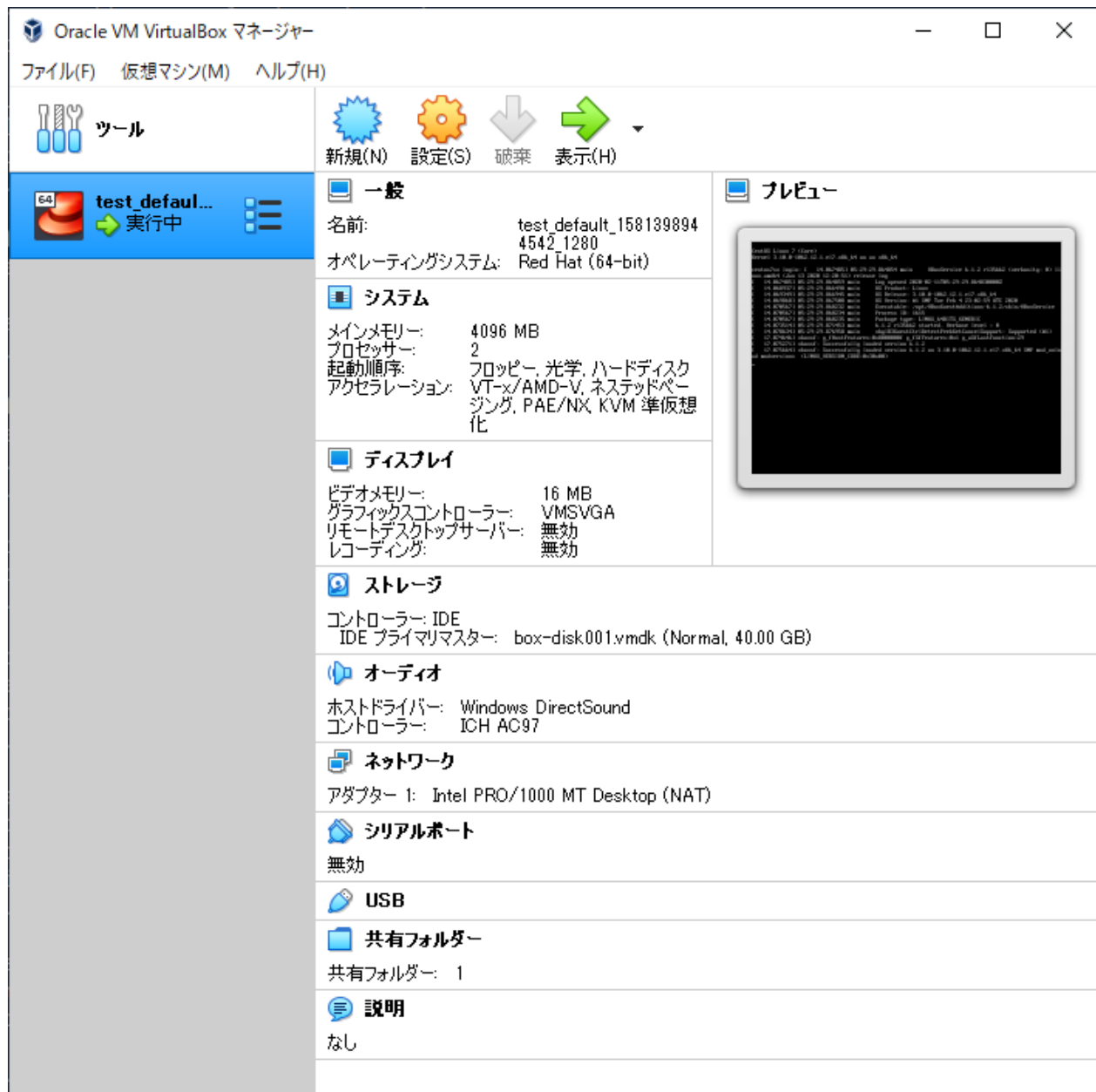
```
==> box: Box file was not detected as metadata. Adding it directly...
==> box: Adding box 'mycentos-custom' (v0) for provider:
      box: Unpacking necessary files from: file:///C:/vagrant/my_centos/mycentos7-custom.
↪box
      box:
==> box: Successfully added box 'mycentos-custom' (v0) for 'virtualbox'!
PS C:\vagrant\my_centos>
PS C:\vagrant\my_centos> vagrant box list
centos/7          (virtualbox, 1905.1)
mycentos          (virtualbox, 0)
mycentos-custom  (virtualbox, 0)
PS C:\vagrant\my_centos>
```

Box ファイルを元に仮想マシンを作成

Box ファイルを作成したフォルダーとは別のフォルダーで仮想マシンを作成し、内容を確認します。

Vagrantfile を取り込まないで Box ファイルを作成した場合

- Ovmc VM VirtualBox マネージャーで仮想マシン自体のサマリーを確認すると、登録されている仮想マシン名がデフォルトになっていたり、ネットワークアダプターが 1 つだけなど、元の仮想マシンの仕様と多少の差異が発生しています。
- 作成されたばかりの Vagrantfile は `config.vm.box` だけが定義されています。
- `vagrant up` コマンドのログを確認すると VB Guest Additions が導入されていることがわかります。
- `vagrant ssh` コマンドで接続して確認すると、元の仮想マシンと同じホスト名になっており、各パッケージもアップデート済みです。



```
PS C:\vagrant\test> ls
PS C:\vagrant\test> vagrant init mycentos
A `Vagrantfile` has been placed in this directory. You are now
ready to `vagrant up` your first virtual environment! Please read
the comments in the Vagrantfile as well as documentation on
`vagrantup.com` for more information on using Vagrant.
PS C:\vagrant\test> cat .\Vagrantfile
# -*- mode: ruby -*-
# vi: set ft=ruby :

# All Vagrant configuration is done below. The "2" in Vagrant.configure
# configures the configuration version (we support older styles for
```

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```
# backwards compatibility). Please don't change it unless you know what
# you're doing.
Vagrant.configure("2") do |config|
  # The most common configuration options are documented and commented below.
  # For a complete reference, please see the online documentation at
  # https://docs.vagrantup.com.

  # Every Vagrant development environment requires a box. You can search for
  # boxes at https://vagrantcloud.com/search.
  config.vm.box = "mycentos"

  # Disable automatic box update checking. If you disable this, then
  # boxes will only be checked for updates when the user runs
  # `vagrant box outdated`. This is not recommended.
  # config.vm.box_check_update = false

  # Create a forwarded port mapping which allows access to a specific port
  # within the machine from a port on the host machine. In the example below,
  # accessing "localhost:8080" will access port 80 on the guest machine.
  # NOTE: This will enable public access to the opened port
  # config.vm.network "forwarded_port", guest: 80, host: 8080

  # Create a forwarded port mapping which allows access to a specific port
  # within the machine from a port on the host machine and only allow access
  # via 127.0.0.1 to disable public access
  # config.vm.network "forwarded_port", guest: 80, host: 8080, host_ip: "127.0.0.1"

  # Create a private network, which allows host-only access to the machine
  # using a specific IP.
  # config.vm.network "private_network", ip: "192.168.33.10"

  # Create a public network, which generally matched to bridged network.
  # Bridged networks make the machine appear as another physical device on
  # your network.
  # config.vm.network "public_network"

  # Share an additional folder to the guest VM. The first argument is
  # the path on the host to the actual folder. The second argument is
  # the path on the guest to mount the folder. And the optional third
  # argument is a set of non-required options.
  # config.vm.synced_folder "../data", "/vagrant_data"

  # Provider-specific configuration so you can fine-tune various
  # backing providers for Vagrant. These expose provider-specific options.
  # Example for VirtualBox:
  #
  # config.vm.provider "virtualbox" do |vb|
  #   # Display the VirtualBox GUI when booting the machine
```

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```
# vb.gui = true
#
# # Customize the amount of memory on the VM:
# vb.memory = "1024"
# end
#
# View the documentation for the provider you are using for more
# information on available options.

# Enable provisioning with a shell script. Additional provisioners such as
# Ansible, Chef, Docker, Puppet and Salt are also available. Please see the
# documentation for more information about their specific syntax and use.
# config.vm.provision "shell", inline: <<-SHELL
#   apt-get update
#   apt-get install -y apache2
# SHELL
end
PS C:\vagrant\test> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'mycentos'...
==> default: Matching MAC address for NAT networking...
==> default: Setting the name of the VM: test_default_1581398944542_1280
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Machine booted and ready!
[default] GuestAdditions 6.1.2 running --- OK.
==> default: Checking for guest additions in VM...
==> default: Mounting shared folders...
    default: /vagrant => C:/vagrant/test
PS C:\vagrant\test> vagrant ssh
Last login: Tue Feb 11 03:24:13 2020 from 192.168.1.50
[vagrant@centos7sv ~]$
[vagrant@centos7sv ~]$ sudo yum -y update
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirrors.cat.net
 * extras: mirrors.cat.net
 * updates: mirrors.cat.net
No packages marked for update
[vagrant@centos7sv ~]$
```

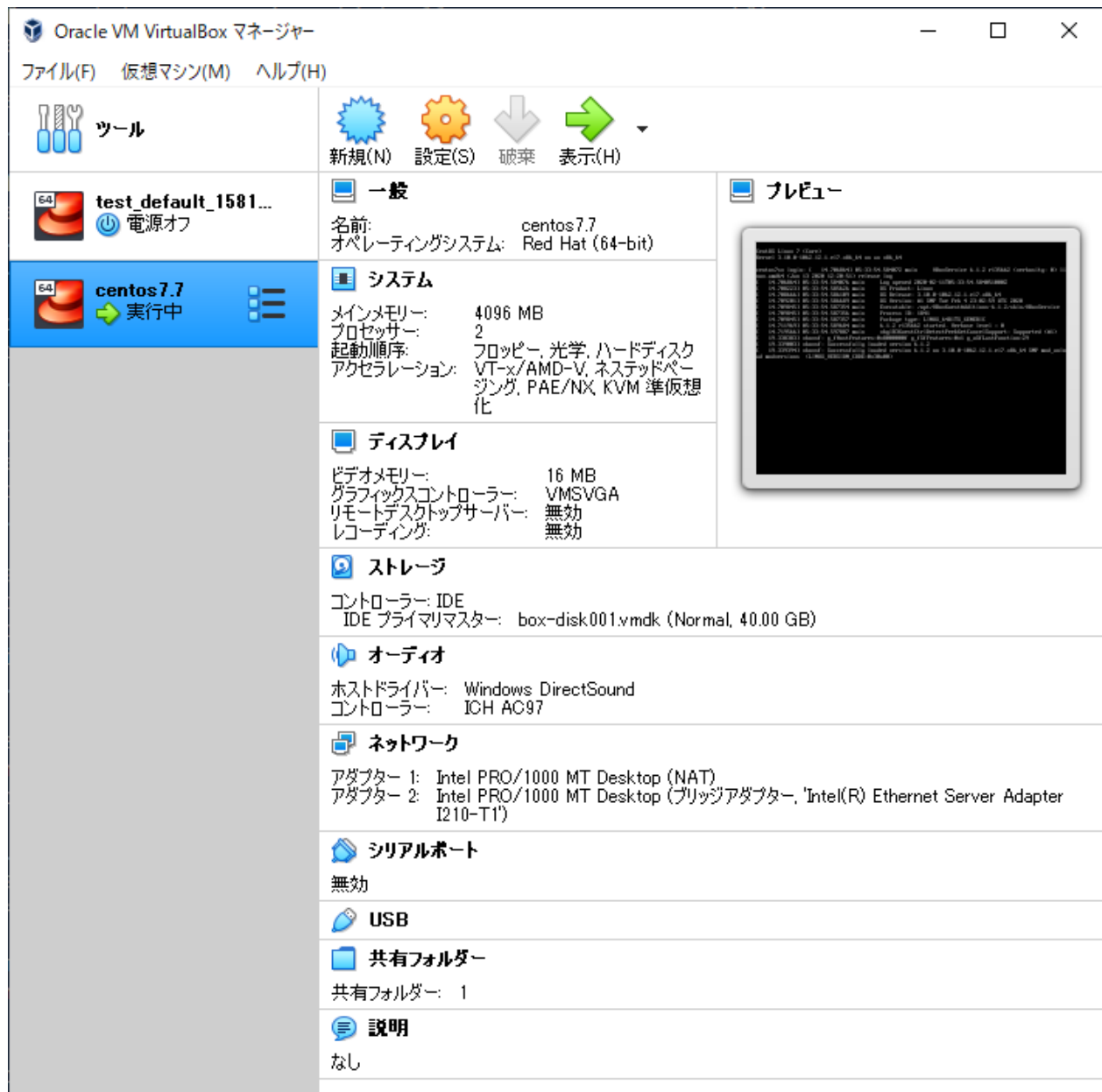
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```
[vagrant@centos7sv ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen_
↳1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↳default qlen 1000
    link/ether 52:54:00:8a:fe:e6 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0
        valid_lft 86267sec preferred_lft 86267sec
    inet6 fe80::5054:ff:fe8a:fee6/64 scope link
        valid_lft forever preferred_lft forever
[vagrant@centos7sv ~]$
[vagrant@centos7sv ~]$ logout
Connection to 127.0.0.1 closed.
PS C:\vagrant\test> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\test>
```

Vagrantfile を取り込んで Box ファイルを作成した場合

- Ovale VM VirtualBox マネージャーで仮想マシン自体のサマリーを確認すると、仮想マシン名やネットワークアダプターの数や設定などが元になった仮想マシンのものと同じ設定になっています。
- 作成されたばかりの Vagrantfile は config.vm.box だけが定義されています。
- `vagrant up` コマンドのログを確認すると VB Guest Additions が導入されていることがわかります。
- `vagrant ssh` コマンドで接続して確認すると、元の仮想マシンと同じホスト名になっており、各パッケージもアップデート済み、MAC アドレスも同じになっています。



```
PS C:\vagrant\test> ls
PS C:\vagrant\test> vagrant init mycentos-custom
A `Vagrantfile` has been placed in this directory. You are now
ready to `vagrant up` your first virtual environment! Please read
the comments in the Vagrantfile as well as documentation on
`vagrantup.com` for more information on using Vagrant.
PS C:\vagrant\test> cat .\Vagrantfile
# -*- mode: ruby -*-
# vi: set ft=ruby :

# All Vagrant configuration is done below. The "2" in Vagrant.configure
# configures the configuration version (we support older styles for
```

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```
# backwards compatibility). Please don't change it unless you know what
# you're doing.
Vagrant.configure("2") do |config|
  # The most common configuration options are documented and commented below.
  # For a complete reference, please see the online documentation at
  # https://docs.vagrantup.com.

  # Every Vagrant development environment requires a box. You can search for
  # boxes at https://vagrantcloud.com/search.
  config.vm.box = "mycentos-custom"

  # Disable automatic box update checking. If you disable this, then
  # boxes will only be checked for updates when the user runs
  # `vagrant box outdated`. This is not recommended.
  # config.vm.box_check_update = false

  # Create a forwarded port mapping which allows access to a specific port
  # within the machine from a port on the host machine. In the example below,
  # accessing "localhost:8080" will access port 80 on the guest machine.
  # NOTE: This will enable public access to the opened port
  # config.vm.network "forwarded_port", guest: 80, host: 8080

  # Create a forwarded port mapping which allows access to a specific port
  # within the machine from a port on the host machine and only allow access
  # via 127.0.0.1 to disable public access
  # config.vm.network "forwarded_port", guest: 80, host: 8080, host_ip: "127.0.0.1"

  # Create a private network, which allows host-only access to the machine
  # using a specific IP.
  # config.vm.network "private_network", ip: "192.168.33.10"

  # Create a public network, which generally matched to bridged network.
  # Bridged networks make the machine appear as another physical device on
  # your network.
  # config.vm.network "public_network"

  # Share an additional folder to the guest VM. The first argument is
  # the path on the host to the actual folder. The second argument is
  # the path on the guest to mount the folder. And the optional third
  # argument is a set of non-required options.
  # config.vm.synced_folder "../data", "/vagrant_data"

  # Provider-specific configuration so you can fine-tune various
  # backing providers for Vagrant. These expose provider-specific options.
  # Example for VirtualBox:
  #
  # config.vm.provider "virtualbox" do |vb|
  #   # Display the VirtualBox GUI when booting the machine
```

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```
# vb.gui = true
#
# # Customize the amount of memory on the VM:
# vb.memory = "1024"
# end
#
# View the documentation for the provider you are using for more
# information on available options.

# Enable provisioning with a shell script. Additional provisioners such as
# Ansible, Chef, Docker, Puppet and Salt are also available. Please see the
# documentation for more information about their specific syntax and use.
# config.vm.provision "shell", inline: <<-SHELL
#   apt-get update
#   apt-get install -y apache2
# SHELL
end
PS C:\vagrant\test> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'mycentos-custom'...
==> default: Matching MAC address for NAT networking...
==> default: Setting the name of the VM: centos7.7
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Machine booted and ready!
[default] GuestAdditions 6.1.2 running --- OK.
==> default: Checking for guest additions in VM...
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
    default: /vagrant => C:/vagrant/test
==> default: Running provisioner: shell...
    default: Running: inline script
    default: Loaded plugins: fastestmirror
    default: Loading mirror speeds from cached hostfile
    default:  * base: mirrors.cat.net
    default:  * extras: mirrors.cat.net
    default:  * updates: mirrors.cat.net
```

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```
default: No packages marked for update
PS C:\vagrant\test> vagrant ssh
Last login: Tue Feb 11 03:24:13 2020 from 192.168.1.50
[vagrant@centos7sv ~]$
[vagrant@centos7sv ~]$ sudo yum -y update
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirrors.cat.net
 * extras: mirrors.cat.net
 * updates: mirrors.cat.net
No packages marked for update
[vagrant@centos7sv ~]$
[vagrant@centos7sv ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen_
↪1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 52:54:00:8a:fe:e6 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0
        valid_lft 86324sec preferred_lft 86324sec
    inet6 fe80::5054:ff:fe8a:fee6/64 scope link
        valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 00:00:6c:00:00:01 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.37/24 brd 192.168.1.255 scope global noprefixroute dynamic eth1
        valid_lft 14324sec preferred_lft 14324sec
    inet6 fe80::200:6cff:fe00:1/64 scope link
        valid_lft forever preferred_lft forever
[vagrant@centos7sv ~]$
[vagrant@centos7sv ~]$ logout
Connection to 127.0.0.1 closed.
PS C:\vagrant\test>
PS C:\vagrant\test> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\test>
```

2.10 複数の仮想マシンの操作

Vagrantfile に複数の仮想マシンを定義できます。これにより、一度に複数の仮想マシンを作成するなどの操作が可能になります。仮想マシンごとの操作も可能です。

【トピックス】

- ・ 仮想マシンの定義
- ・ 共通した定義の取り扱い
- ・ *Vagrant* コマンド

2.10.1 仮想マシンの定義

`config.vm.define` を使用して、仮想マシンごとに定義します。`config.vm.define` の後に定義した名前 (`websv`, `dbsv`) が Vagrant 内の仮想マシンの識別名です。

```
config.vm.define :websv do |web|  
  仮想マシンごとの定義  
end
```

Web サーバーとデータベースサーバーの 2 台の仮想マシンを定義した Vagrantfile です。

```
$scriptweb = <<-'SCRIPT'  
echo hello, Web world  
SCRIPT  
$scriptdb = <<-'SCRIPT'  
echo hello, db world  
SCRIPT  
  
Vagrant.configure("2") do |config|  
  config.vm.define :websv do |web|  
    web.vm.box = "centos/7"  
    web.vm.network "public_network", mac: "080027000001"  
    web.vm.hostname = "websv"  
    web.vm.provider "virtualbox" do |vb|  
      vb.gui = true  
      vb.name = "webserver"  
      vb.memory = "4096"  
      vb.cpus = 2
```

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```

    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  web.vm.provision "shell", inline: $scriptweb
end

config.vm.define :dbsv do |db|
  db.vm.box = "centos/7"
  db.vm.network "public_network", mac: "080027000002"
  db.vm.hostname = "dbsv"
  db.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "dbserver"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  db.vm.provision "shell", inline: $scriptdb
end
end

```

実行結果です。ログの各行の先頭に Vagrant 内の仮想マシンの識別名が表示されます。一部のコマンドを除いて `vagrant up` や `vagrant halt` など仮想マシンに対するコマンドはすべての仮想マシンに適用されます。

```

PS C:\vagrant\multi> vagrant up
Bringing machine 'websv' up with 'virtualbox' provider...
Bringing machine 'dbsv' up with 'virtualbox' provider...
==> websv: Importing base box 'centos/7'...
==> websv: Matching MAC address for NAT networking...
==> websv: Checking if box 'centos/7' version '1905.1' is up to date...
==> websv: Setting the name of the VM: webserver
==> websv: Clearing any previously set network interfaces...
==> websv: Preparing network interfaces based on configuration...
    websv: Adapter 1: nat
    websv: Adapter 2: bridged
==> websv: Forwarding ports...
    websv: 22 (guest) => 2222 (host) (adapter 1)
==> websv: Running 'pre-boot' VM customizations...
==> websv: Booting VM...
==> websv: Waiting for machine to boot. This may take a few minutes...

```

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```
websv: SSH address: 127.0.0.1:2222
websv: SSH username: vagrant
websv: SSH auth method: private key
websv:
websv: Vagrant insecure key detected. Vagrant will automatically replace
websv: this with a newly generated keypair for better security.
websv:
websv: Inserting generated public key within guest...
websv: Removing insecure key from the guest if it's present...
websv: Key inserted! Disconnecting and reconnecting using new SSH key...
==> websv: Machine booted and ready!
==> websv: Checking for guest additions in VM...
websv: No guest additions were detected on the base box for this VM! Guest
websv: additions are required for forwarded ports, shared folders, host only
websv: networking, and more. If SSH fails on this machine, please install
websv: the guest additions and repackage the box to continue.
websv:
websv: This is not an error message; everything may continue to work properly,
websv: in which case you may ignore this message.
==> websv: Setting hostname...
==> websv: Configuring and enabling network interfaces...
==> websv: Rsyncing folder: /cygdrive/c/vagrant/multi/ => /vagrant
==> websv: Running provisioner: shell...
websv: Running: inline script
websv: hello, Web world
==> dbsv: Importing base box 'centos/7'...
==> dbsv: Matching MAC address for NAT networking...
==> dbsv: Checking if box 'centos/7' version '1905.1' is up to date...
==> dbsv: Setting the name of the VM: dbserver
==> dbsv: Fixed port collision for 22 => 2222. Now on port 2200.
==> dbsv: Clearing any previously set network interfaces...
==> dbsv: Preparing network interfaces based on configuration...
dbsv: Adapter 1: nat
dbsv: Adapter 2: bridged
==> dbsv: Forwarding ports...
dbsv: 22 (guest) => 2200 (host) (adapter 1)
==> dbsv: Running 'pre-boot' VM customizations...
==> dbsv: Booting VM...
==> dbsv: Waiting for machine to boot. This may take a few minutes...
dbsv: SSH address: 127.0.0.1:2200
dbsv: SSH username: vagrant
dbsv: SSH auth method: private key
dbsv:
dbsv: Vagrant insecure key detected. Vagrant will automatically replace
dbsv: this with a newly generated keypair for better security.
dbsv:
dbsv: Inserting generated public key within guest...
dbsv: Removing insecure key from the guest if it's present...
```

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```
dbsv: Key inserted! Disconnecting and reconnecting using new SSH key...
==> dbsv: Machine booted and ready!
==> dbsv: Checking for guest additions in VM...
dbsv: No guest additions were detected on the base box for this VM! Guest
dbsv: additions are required for forwarded ports, shared folders, host only
dbsv: networking, and more. If SSH fails on this machine, please install
dbsv: the guest additions and repackage the box to continue.
dbsv:
dbsv: This is not an error message; everything may continue to work properly,
dbsv: in which case you may ignore this message.
==> dbsv: Setting hostname...
==> dbsv: Configuring and enabling network interfaces...
==> dbsv: Rsyncing folder: /cygdrive/c/vagrant/multi/ => /vagrant
==> dbsv: Running provisioner: shell...
dbsv: Running: inline script
dbsv: hello, db world
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant halt
==> dbsv: Attempting graceful shutdown of VM...
==> websv: Attempting graceful shutdown of VM...
PS C:\vagrant\multi>
```

2.10.2 共通した定義の取り扱い

「仮想マシンの定義」で使用した Vagrantfile です。

```
$scriptweb = <<-'SCRIPT'
echo hello, Web world
SCRIPT
$scriptdb = <<-'SCRIPT'
echo hello, db world
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.define :websv do |web|
    web.vm.box = "centos/7"
    web.vm.network "public_network", mac: "080027000001"
    web.vm.hostname = "websv"
    web.vm.provider "virtualbox" do |vb|
      vb.gui = true
      vb.name = "webserver"
      vb.memory = "4096"
      vb.cpus = 2
      vb.customize [
```

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```

        "modifyvm", :id,
        "--ioapic", "on",
        "--graphicscontroller", "vmsvga"
    ]
end
web.vm.provision "shell", inline: $scriptweb
end

config.vm.define :db do |db|
  db.vm.box = "centos/7"
  db.vm.network "public_network", mac: "080027000002"
  db.vm.hostname = "db"
  db.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.name = "dbserver"
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  db.vm.provision "shell", inline: $scriptdb
end
end

```

いくつかの項目は同じ値を設定しています。このような共通項目をまとめて定義し、仮想マシンごとの定義は `config.vm.define` で定義します。

```

Vagrant.configure("2") do |config|
  共通の定義
  config.vm.define :web do |web|
    仮想マシン固有の定義
  end
end

```

共通の定義部分をまとめて定義した Vagrantfile です。追加として今回は共通部分にも `config.vm.provision` を入れています。

```

$script = <<-'SCRIPT'
echo hello, Vagrant world
SCRIPT
$scriptweb = <<-'SCRIPT'
echo hello, Web world
SCRIPT
$scriptdb = <<-'SCRIPT'

```

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```
echo hello, db world
SCRIPT

Vagrant.configure("2") do |config|
  config.vm.box = "centos/7"
  config.vm.provider "virtualbox" do |vb|
    vb.gui = true
    vb.memory = "4096"
    vb.cpus = 2
    vb.customize [
      "modifyvm", :id,
      "--ioapic", "on",
      "--graphicscontroller", "vmsvga"
    ]
  end
  config.vm.provision "shell", inline: $script

  config.vm.define :websv do |web|
    web.vm.network "public_network", mac: "080027000001"
    web.vm.hostname = "websv"
    web.vm.provider "virtualbox" do |vb|
      vb.name = "webserver"
    end
    web.vm.provision "shell", inline: $scriptweb
  end

  config.vm.define :dbsv do |db|
    db.vm.network "public_network", mac: "080027000002"
    db.vm.hostname = "dbsv"
    db.vm.provider "virtualbox" do |vb|
      vb.name = "dbserver"
    end
    db.vm.provision "shell", inline: $scriptdb
  end
end
```

実行結果です。共通部分、固有部分を組み合わせて処理していることがわかります。

```
PS C:\vagrant\multi> vagrant up
Bringing machine 'websv' up with 'virtualbox' provider...
Bringing machine 'dbsv' up with 'virtualbox' provider...
==> websv: Importing base box 'centos/7'...
==> websv: Matching MAC address for NAT networking...
==> websv: Checking if box 'centos/7' version '1905.1' is up to date...
==> websv: Setting the name of the VM: webserver
==> websv: Clearing any previously set network interfaces...
==> websv: Preparing network interfaces based on configuration...
```

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```
webserv: Adapter 1: nat
webserv: Adapter 2: bridged
==> webserv: Forwarding ports...
webserv: 22 (guest) => 2222 (host) (adapter 1)
==> webserv: Running 'pre-boot' VM customizations...
==> webserv: Booting VM...
==> webserv: Waiting for machine to boot. This may take a few minutes...
webserv: SSH address: 127.0.0.1:2222
webserv: SSH username: vagrant
webserv: SSH auth method: private key
webserv:
webserv: Vagrant insecure key detected. Vagrant will automatically replace
webserv: this with a newly generated keypair for better security.
webserv:
webserv: Inserting generated public key within guest...
webserv: Removing insecure key from the guest if it's present...
webserv: Key inserted! Disconnecting and reconnecting using new SSH key...
==> webserv: Machine booted and ready!
==> webserv: Checking for guest additions in VM...
webserv: No guest additions were detected on the base box for this VM! Guest
webserv: additions are required for forwarded ports, shared folders, host only
webserv: networking, and more. If SSH fails on this machine, please install
webserv: the guest additions and repackaging the box to continue.
webserv:
webserv: This is not an error message; everything may continue to work properly,
webserv: in which case you may ignore this message.
==> webserv: Setting hostname...
==> webserv: Configuring and enabling network interfaces...
==> webserv: Rsyncing folder: /cygdrive/c/vagrant/multi/ => /vagrant
==> webserv: Running provisioner: shell...
webserv: Running: inline script
webserv: hello, Vagrant world
==> webserv: Running provisioner: shell...
webserv: Running: inline script
webserv: hello, Web world
==> dbstv: Importing base box 'centos/7'...
==> dbstv: Matching MAC address for NAT networking...
==> dbstv: Checking if box 'centos/7' version '1905.1' is up to date...
==> dbstv: Setting the name of the VM: dbserver
==> dbstv: Fixed port collision for 22 => 2222. Now on port 2200.
==> dbstv: Clearing any previously set network interfaces...
==> dbstv: Preparing network interfaces based on configuration...
dbstv: Adapter 1: nat
dbstv: Adapter 2: bridged
==> dbstv: Forwarding ports...
dbstv: 22 (guest) => 2200 (host) (adapter 1)
==> dbstv: Running 'pre-boot' VM customizations...
==> dbstv: Booting VM...
```

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```
==> dbsv: Waiting for machine to boot. This may take a few minutes...
dbsv: SSH address: 127.0.0.1:2200
dbsv: SSH username: vagrant
dbsv: SSH auth method: private key
dbsv:
dbsv: Vagrant insecure key detected. Vagrant will automatically replace
dbsv: this with a newly generated keypair for better security.
dbsv:
dbsv: Inserting generated public key within guest...
dbsv: Removing insecure key from the guest if it's present...
dbsv: Key inserted! Disconnecting and reconnecting using new SSH key...
==> dbsv: Machine booted and ready!
==> dbsv: Checking for guest additions in VM...
dbsv: No guest additions were detected on the base box for this VM! Guest
dbsv: additions are required for forwarded ports, shared folders, host only
dbsv: networking, and more. If SSH fails on this machine, please install
dbsv: the guest additions and repack the box to continue.
dbsv:
dbsv: This is not an error message; everything may continue to work properly,
dbsv: in which case you may ignore this message.
==> dbsv: Setting hostname...
==> dbsv: Configuring and enabling network interfaces...
==> dbsv: Rsyncing folder: /cygdrive/c/vagrant/multi/ => /vagrant
==> dbsv: Running provisioner: shell...
dbsv: Running: inline script
dbsv: hello, Vagrant world
==> dbsv: Running provisioner: shell...
dbsv: Running: inline script
dbsv: hello, db world
PS C:\vagrant\multi>
```

プロビジョニングの部分です。どちらの仮想マシンも共通部分のプロビジョニングの実行後、仮想マシン固有のプロビジョニングを実行しています。

```
==> websv: Running provisioner: shell...
websv: Running: inline script
websv: hello, Vagrant world
==> websv: Running provisioner: shell...
websv: Running: inline script
websv: hello, Web world
```

```
==> dbsv: Running provisioner: shell...
dbsv: Running: inline script
dbsv: hello, Vagrant world
==> dbsv: Running provisioner: shell...
dbsv: Running: inline script
dbsv: hello, db world
```

2.10.3 Vagrant コマンド

`vagrant up` や `vagrant halt` などの Vagrant コマンドは、定義した複数の仮想マシンすべてに対し適用されます。任意の仮想マシンに適用するには Vagrant コマンドに続けて Vagrant 内の仮想マシン名を指定します。

注釈: 複数の仮想マシンを定義した環境の `vagrant ssh` コマンドは仮想マシンの指定が必須です。

仮想マシン名を指定した実行結果です。

```
PS C:\vagrant\multi> vagrant up dbsv
Bringing machine 'dbsv' up with 'virtualbox' provider...
==> dbsv: Importing base box 'centos/7'...
==> dbsv: Matching MAC address for NAT networking...
==> dbsv: Checking if box 'centos/7' version '1905.1' is up to date...
==> dbsv: Setting the name of the VM: dbserver
==> dbsv: Clearing any previously set network interfaces...
==> dbsv: Preparing network interfaces based on configuration...
    dbsv: Adapter 1: nat
    dbsv: Adapter 2: bridged
==> dbsv: Forwarding ports...
    dbsv: 22 (guest) => 2222 (host) (adapter 1)
==> dbsv: Running 'pre-boot' VM customizations...
==> dbsv: Booting VM...
==> dbsv: Waiting for machine to boot. This may take a few minutes...
    dbsv: SSH address: 127.0.0.1:2222
    dbsv: SSH username: vagrant
    dbsv: SSH auth method: private key
    dbsv:
    dbsv: Vagrant insecure key detected. Vagrant will automatically replace
    dbsv: this with a newly generated keypair for better security.
    dbsv:
    dbsv: Inserting generated public key within guest...
    dbsv: Removing insecure key from the guest if it's present...
    dbsv: Key inserted! Disconnecting and reconnecting using new SSH key...
==> dbsv: Machine booted and ready!
==> dbsv: Checking for guest additions in VM...
    dbsv: No guest additions were detected on the base box for this VM! Guest
    dbsv: additions are required for forwarded ports, shared folders, host only
    dbsv: networking, and more. If SSH fails on this machine, please install
    dbsv: the guest additions and repackage the box to continue.
    dbsv:
    dbsv: This is not an error message; everything may continue to work properly,
    dbsv: in which case you may ignore this message.
```

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```
==> dbsv: Setting hostname...
==> dbsv: Configuring and enabling network interfaces...
==> dbsv: Rsyncing folder: /cygdrive/c/vagrant/multi/ => /vagrant
==> dbsv: Running provisioner: shell...
    dbsv: Running: inline script
    dbsv: hello, Vagrant world
==> dbsv: Running provisioner: shell...
    dbsv: Running: inline script
    dbsv: hello, db world
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant up websv
Bringing machine 'websv' up with 'virtualbox' provider...
==> websv: Importing base box 'centos/7'...
==> websv: Matching MAC address for NAT networking...
==> websv: Checking if box 'centos/7' version '1905.1' is up to date...
==> websv: Setting the name of the VM: webserver
==> websv: Fixed port collision for 22 => 2222. Now on port 2200.
==> websv: Clearing any previously set network interfaces...
==> websv: Preparing network interfaces based on configuration...
    websv: Adapter 1: nat
    websv: Adapter 2: bridged
==> websv: Forwarding ports...
    websv: 22 (guest) => 2200 (host) (adapter 1)
==> websv: Running 'pre-boot' VM customizations...
==> websv: Booting VM...
==> websv: Waiting for machine to boot. This may take a few minutes...
    websv: SSH address: 127.0.0.1:2200
    websv: SSH username: vagrant
    websv: SSH auth method: private key
    websv:
    websv: Vagrant insecure key detected. Vagrant will automatically replace
    websv: this with a newly generated keypair for better security.
    websv:
    websv: Inserting generated public key within guest...
    websv: Removing insecure key from the guest if it's present...
    websv: Key inserted! Disconnecting and reconnecting using new SSH key...
==> websv: Machine booted and ready!
==> websv: Checking for guest additions in VM...
    websv: No guest additions were detected on the base box for this VM! Guest
    websv: additions are required for forwarded ports, shared folders, host only
    websv: networking, and more. If SSH fails on this machine, please install
    websv: the guest additions and repackage the box to continue.
    websv:
    websv: This is not an error message; everything may continue to work properly,
    websv: in which case you may ignore this message.
==> websv: Setting hostname...
==> websv: Configuring and enabling network interfaces...
==> websv: Rsyncing folder: /cygdrive/c/vagrant/multi/ => /vagrant
```

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```

==> webserv: Running provisioner: shell...
    webserv: Running: inline script
    webserv: hello, Vagrant world
==> webserv: Running provisioner: shell...
    webserv: Running: inline script
    webserv: hello, Web world
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant ssh webserv
[vagrant@webserv ~]$
[vagrant@webserv ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen_
↪1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 52:54:00:8a:fe:e6 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0
        valid_lft 86378sec preferred_lft 86378sec
    inet6 fe80::5054:ff:fe8a:fee6/64 scope link
        valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 08:00:27:00:00:01 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.246/24 brd 192.168.1.255 scope global noprefixroute dynamic eth1
        valid_lft 14379sec preferred_lft 14379sec
    inet6 fe80::a00:27ff:fe00:1/64 scope link
        valid_lft forever preferred_lft forever
[vagrant@webserv ~]$
[vagrant@webserv ~]$ logout
Connection to 127.0.0.1 closed.
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant ssh dbstv
[vagrant@dbstv ~]$
[vagrant@dbstv ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen_
↪1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 52:54:00:8a:fe:e6 brd ff:ff:ff:ff:ff:ff

```

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```

    inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0
        valid_lft 86142sec preferred_lft 86142sec
    inet6 fe80::5054:ff:fe8a:fee6/64 scope link
        valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↪default qlen 1000
    link/ether 08:00:27:00:00:02 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.31/24 brd 192.168.1.255 scope global noprefixroute dynamic eth1
        valid_lft 14144sec preferred_lft 14144sec
    inet6 fe80::a00:27ff:fe00:2/64 scope link
        valid_lft forever preferred_lft forever
[vagrant@dbsv ~]$
[vagrant@dbsv ~]$ logout
Connection to 127.0.0.1 closed.
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant halt webserv
==> webserv: Attempting graceful shutdown of VM...
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant status webserv
Current machine states:

websrv                                poweroff (virtualbox)

The VM is powered off. To restart the VM, simply run `vagrant up`
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant halt dbsv
==> dbsv: Attempting graceful shutdown of VM...
PS C:\vagrant\multi>
PS C:\vagrant\multi> vagrant status dbsv
Current machine states:

dbsv                                  poweroff (virtualbox)

The VM is powered off. To restart the VM, simply run `vagrant up`
PS C:\vagrant\multi>

```

2.11 付録

2.11.1 プラグインを使用した VB Guest Additions のインストール

`vagrant up` コマンドで仮想マシンを起動したとき、VB Guest Additions がインストール済みか確認されます。インストールされていないと次のメッセージが表示されます。

```
==> default: Checking for guest additions in VM...
default: No guest additions were detected on the base box for this VM! Guest
default: additions are required for forwarded ports, shared folders, host only
default: networking, and more. If SSH fails on this machine, please install
default: the guest additions and repackage the box to continue.
default:
default: This is not an error message; everything may continue to work properly,
default: in which case you may ignore this message.
```

Vagrant で作成した仮想マシンに VB Guest Additions をインストールするには次のコマンドを実行します。

```
vagrant plugin install vagrant-vbguest
vagrant vbguest
```

以下の順番に実行します。

VB Guest Additions がインストールされていない状態で仮想マシンを起動

VB Guest Additions をインストール

仮想マシンを停止

仮想マシンを起動

仮想マシンを停止

実行ログです。仮想マシンの 2 回目の起動時に次のメッセージが表示され、VB Guest Additions がインストール済みであることがわかります。

```
[default] GuestAdditions 6.1.2 running --- OK.
==> default: Checking for guest additions in VM...
```

```
PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'centos/7'...
==> default: Matching MAC address for NAT networking...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
```

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```
==> default: Setting the name of the VM: node1
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: No guest additions were detected on the base box for this VM! Guest
    default: additions are required for forwarded ports, shared folders, host only
    default: networking, and more. If SSH fails on this machine, please install
    default: the guest additions and repackage the box to continue.
    default:
    default: This is not an error message; everything may continue to work properly,
    default: in which case you may ignore this message.
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
PS C:\vagrant\my_centos> vagrant plugin install vagrant-vbguest
Installing the 'vagrant-vbguest' plugin. This can take a few minutes...
Fetching: micromachine-3.0.0.gem (100%)
Fetching: vagrant-vbguest-0.23.0.gem (100%)
Installed the plugin 'vagrant-vbguest (0.23.0)'!
PS C:\vagrant\my_centos> vagrant vbguest
[default] No Virtualbox Guest Additions installation found.
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: ftp.riken.jp
 * extras: ftp.riken.jp
 * updates: ftp.riken.jp
Resolving Dependencies
--> Running transaction check
---> Package centos-release.x86_64 0:7-6.1810.2.el7.centos will be updated
---> Package centos-release.x86_64 0:7-7.1908.0.el7.centos will be an update
```

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```
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package                Arch             Version                               Repository  Size
=====
Updating:
centos-release          x86_64           7-7.1908.0.el7.centos                base        26 k

Transaction Summary
=====
Upgrade 1 Package

Total download size: 26 k
Downloading packages:
No Presto metadata available for base
Public key for centos-release-7-7.1908.0.el7.centos.x86_64.rpm is not installed
warning: /var/cache/yum/x86_64/7/base/packages/centos-release-7-7.1908.0.el7.centos.
↳x86_64.rpm: Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Importing GPG key 0xF4A80EB5:
  Userid      : "CentOS-7 Key (CentOS 7 Official Signing Key) <security@centos.org>"
  Fingerprint: 6341 ab27 53d7 8a78 a7c2 7bb1 24c6 a8a7 f4a8 0eb5
  Package     : centos-release-7-6.1810.2.el7.centos.x86_64 (@anaconda)
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Updating   : centos-release-7-7.1908.0.el7.centos.x86_64                1/2
  Cleanup   : centos-release-7-6.1810.2.el7.centos.x86_64                2/2
  Verifying  : centos-release-7-7.1908.0.el7.centos.x86_64                1/2
  Verifying  : centos-release-7-6.1810.2.el7.centos.x86_64                2/2

Updated:
  centos-release.x86_64 0:7-7.1908.0.el7.centos

Complete!
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: ftp.riken.jp
 * extras: ftp.riken.jp
 * updates: ftp.riken.jp
Resolving Dependencies
--> Running transaction check
---> Package kernel-devel.x86_64 0:3.10.0-957.12.2.el7 will be installed
--> Processing Dependency: perl for package: kernel-devel-3.10.0-957.12.2.el7.x86_64
```

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```

--> Running transaction check
---> Package perl.x86_64 4:5.16.3-294.el7_6 will be installed
--> Processing Dependency: perl-libs = 4:5.16.3-294.el7_6 for package: 4:perl-5.16.3-
↳294.el7_6.x86_64
--> Processing Dependency: perl(Socket) >= 1.3 for package: 4:perl-5.16.3-294.el7_6.
↳x86_64
--> Processing Dependency: perl(Scalar::Util) >= 1.10 for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
--> Processing Dependency: perl-macros for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl-libs for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(threads::shared) for package: 4:perl-5.16.3-294.el7_6.
↳x86_64
--> Processing Dependency: perl(threads) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(constant) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(Time::Local) for package: 4:perl-5.16.3-294.el7_6.x86_
↳64
--> Processing Dependency: perl(Time::HiRes) for package: 4:perl-5.16.3-294.el7_6.x86_
↳64
--> Processing Dependency: perl(Storable) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(Socket) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(Scalar::Util) for package: 4:perl-5.16.3-294.el7_6.x86_
↳64
--> Processing Dependency: perl(Pod::Simple::XHTML) for package: 4:perl-5.16.3-294.el7_
↳6.x86_64
--> Processing Dependency: perl(Pod::Simple::Search) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
--> Processing Dependency: perl(Getopt::Long) for package: 4:perl-5.16.3-294.el7_6.x86_
↳64
--> Processing Dependency: perl(Filter::Util::Call) for package: 4:perl-5.16.3-294.el7_
↳6.x86_64
--> Processing Dependency: perl(File::Temp) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(File::Spec::Unix) for package: 4:perl-5.16.3-294.el7_6.
↳x86_64
--> Processing Dependency: perl(File::Spec::Functions) for package: 4:perl-5.16.3-294.
↳el7_6.x86_64
--> Processing Dependency: perl(File::Spec) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(File::Path) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(Exporter) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(Cwd) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: perl(Carp) for package: 4:perl-5.16.3-294.el7_6.x86_64
--> Processing Dependency: libperl.so() (64bit) for package: 4:perl-5.16.3-294.el7_6.
↳x86_64
--> Running transaction check
---> Package perl-Carp.noarch 0:1.26-244.el7 will be installed
---> Package perl-Exporter.noarch 0:5.68-3.el7 will be installed
---> Package perl-File-Path.noarch 0:2.09-2.el7 will be installed
---> Package perl-File-Temp.noarch 0:0.23.01-3.el7 will be installed
---> Package perl-Filter.x86_64 0:1.49-3.el7 will be installed

```

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```

---> Package perl-Getopt-Long.noarch 0:2.40-3.el7 will be installed
--> Processing Dependency: perl(Pod::Usage) >= 1.14 for package: perl-Getopt-Long-2.40-3.el7.noarch
--> Processing Dependency: perl(Text::ParseWords) for package: perl-Getopt-Long-2.40-3.el7.noarch
---> Package perl-PathTools.x86_64 0:3.40-5.el7 will be installed
---> Package perl-Pod-Simple.noarch 1:3.28-4.el7 will be installed
--> Processing Dependency: perl(Pod::Escapes) >= 1.04 for package: 1:perl-Pod-Simple-3.28-4.el7.noarch
--> Processing Dependency: perl(Encode) for package: 1:perl-Pod-Simple-3.28-4.el7.noarch
---> Package perl-Scalar-List-Utils.x86_64 0:1.27-248.el7 will be installed
---> Package perl-Socket.x86_64 0:2.010-4.el7 will be installed
---> Package perl-Storable.x86_64 0:2.45-3.el7 will be installed
---> Package perl-Time-HiRes.x86_64 4:1.9725-3.el7 will be installed
---> Package perl-Time-Local.noarch 0:1.2300-2.el7 will be installed
---> Package perl-constant.noarch 0:1.27-2.el7 will be installed
---> Package perl-libs.x86_64 4:5.16.3-294.el7_6 will be installed
---> Package perl-macros.x86_64 4:5.16.3-294.el7_6 will be installed
---> Package perl-threads.x86_64 0:1.87-4.el7 will be installed
---> Package perl-threads-shared.x86_64 0:1.43-6.el7 will be installed
--> Running transaction check
---> Package perl-Encode.x86_64 0:2.51-7.el7 will be installed
---> Package perl-Pod-Escapes.noarch 1:1.04-294.el7_6 will be installed
---> Package perl-Pod-Usage.noarch 0:1.63-3.el7 will be installed
--> Processing Dependency: perl(Pod::Text) >= 3.15 for package: perl-Pod-Usage-1.63-3.el7.noarch
--> Processing Dependency: perl-Pod-Perldoc for package: perl-Pod-Usage-1.63-3.el7.noarch
---> Package perl-Text-ParseWords.noarch 0:3.29-4.el7 will be installed
--> Running transaction check
---> Package perl-Pod-Perldoc.noarch 0:3.20-4.el7 will be installed
--> Processing Dependency: perl(parent) for package: perl-Pod-Perldoc-3.20-4.el7.noarch
--> Processing Dependency: perl(HTTP::Tiny) for package: perl-Pod-Perldoc-3.20-4.el7.noarch
---> Package perl-podlators.noarch 0:2.5.1-3.el7 will be installed
--> Running transaction check
---> Package perl-HTTP-Tiny.noarch 0:0.033-3.el7 will be installed
---> Package perl-parent.noarch 1:0.225-244.el7 will be installed
--> Finished Dependency Resolution

```

Dependencies Resolved

```

=====
Package                Arch      Version                               Repository                Size
=====
Installing:
kernel-devel            x86_64    3.10.0-957.12.2.el7                  C7.6.1810-updates         17 M

```

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```

Installing for dependencies:
perl                x86_64  4:5.16.3-294.el7_6  C7.6.1810-updates  8.0 M
perl-Carp           noarch  1.26-244.el7        C7.0.1406-base     19 k
perl-Encode         x86_64  2.51-7.el7          C7.0.1406-base     1.5 M
perl-Exporter       noarch  5.68-3.el7          C7.0.1406-base     28 k
perl-File-Path      noarch  2.09-2.el7          C7.0.1406-base     26 k
perl-File-Temp      noarch  0.23.01-3.el7       C7.0.1406-base     56 k
perl-Filter         x86_64  1.49-3.el7          C7.0.1406-base     76 k
perl-Getopt-Long    noarch  2.40-3.el7          C7.5.1804-base     56 k
perl-HTTP-Tiny      noarch  0.033-3.el7         C7.0.1406-base     38 k
perl-PathTools      x86_64  3.40-5.el7          C7.0.1406-base     82 k
perl-Pod-Escapes    noarch  1:1.04-294.el7_6    C7.6.1810-updates  51 k
perl-Pod-Perldoc    noarch  3.20-4.el7          C7.0.1406-base     87 k
perl-Pod-Simple     noarch  1:3.28-4.el7        C7.0.1406-base     216 k
perl-Pod-Usage      noarch  1.63-3.el7          C7.0.1406-base     27 k
perl-Scalar-List-Utils x86_64  1.27-248.el7        C7.0.1406-base     36 k
perl-Socket         x86_64  2.010-4.el7         C7.3.1611-base     49 k
perl-Storable       x86_64  2.45-3.el7          C7.0.1406-base     77 k
perl-Text-ParseWords noarch  3.29-4.el7          C7.0.1406-base     14 k
perl-Time-HiRes     x86_64  4:1.9725-3.el7      C7.0.1406-base     45 k
perl-Time-Local     noarch  1.2300-2.el7        C7.0.1406-base     24 k
perl-constant       noarch  1.27-2.el7          C7.0.1406-base     19 k
perl-libs           x86_64  4:5.16.3-294.el7_6  C7.6.1810-updates  688 k
perl-macros         x86_64  4:5.16.3-294.el7_6  C7.6.1810-updates  44 k
perl-parent         noarch  1:0.225-244.el7     C7.0.1406-base     12 k
perl-podlators      noarch  2.5.1-3.el7         C7.0.1406-base     112 k
perl-threads        x86_64  1.87-4.el7          C7.0.1406-base     49 k
perl-threads-shared x86_64  1.43-6.el7          C7.0.1406-base     39 k

```

Transaction Summary

=====

Install 1 Package (+27 Dependent packages)

Total download size: 28 M

Installed size: 74 M

Downloading packages:

Total 1.6 MB/s | 28 MB 00:18

Running transaction check

Running transaction test

Transaction test succeeded

Running transaction

```

Installing : 1:perl-parent-0.225-244.el7.noarch 1/28
Installing : perl-HTTP-Tiny-0.033-3.el7.noarch 2/28
Installing : perl-podlators-2.5.1-3.el7.noarch 3/28
Installing : perl-Pod-Perldoc-3.20-4.el7.noarch 4/28
Installing : 1:perl-Pod-Escapes-1.04-294.el7_6.noarch 5/28
Installing : perl-Text-ParseWords-3.29-4.el7.noarch 6/28

```

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```

Installing : perl-Encode-2.51-7.el7.x86_64          7/28
Installing : perl-Pod-Usage-1.63-3.el7.noarch        8/28
Installing : 4:perl-libs-5.16.3-294.el7_6.x86_64     9/28
Installing : 4:perl-macros-5.16.3-294.el7_6.x86_64  10/28
Installing : perl-Storable-2.45-3.el7.x86_64        11/28
Installing : perl-Exporter-5.68-3.el7.noarch        12/28
Installing : perl-constant-1.27-2.el7.noarch        13/28
Installing : perl-Time-Local-1.2300-2.el7.noarch     14/28
Installing : perl-Carp-1.26-244.el7.noarch          15/28
Installing : 4:perl-Time-HiRes-1.9725-3.el7.x86_64  16/28
Installing : perl-PathTools-3.40-5.el7.x86_64       17/28
Installing : perl-Scalar-List-Utils-1.27-248.el7.x86_64 18/28
Installing : perl-File-Temp-0.23.01-3.el7.noarch    19/28
Installing : perl-File-Path-2.09-2.el7.noarch       20/28
Installing : perl-threads-shared-1.43-6.el7.x86_64  21/28
Installing : perl-threads-1.87-4.el7.x86_64        22/28
Installing : perl-Filter-1.49-3.el7.x86_64         23/28
Installing : perl-Socket-2.010-4.el7.x86_64        24/28
Installing : 1:perl-Pod-Simple-3.28-4.el7.noarch    25/28
Installing : perl-Getopt-Long-2.40-3.el7.noarch     26/28
Installing : 4:perl-5.16.3-294.el7_6.x86_64        27/28
Installing : kernel-devel-3.10.0-957.12.2.el7.x86_64 28/28
Verifying  : perl-HTTP-Tiny-0.033-3.el7.noarch      1/28
Verifying  : perl-threads-shared-1.43-6.el7.x86_64 2/28
Verifying  : perl-Storable-2.45-3.el7.x86_64       3/28
Verifying  : 1:perl-Pod-Escapes-1.04-294.el7_6.noarch 4/28
Verifying  : perl-Exporter-5.68-3.el7.noarch       5/28
Verifying  : perl-constant-1.27-2.el7.noarch       6/28
Verifying  : perl-PathTools-3.40-5.el7.x86_64      7/28
Verifying  : 1:perl-parent-0.225-244.el7.noarch    8/28
Verifying  : 4:perl-libs-5.16.3-294.el7_6.x86_64  9/28
Verifying  : perl-File-Temp-0.23.01-3.el7.noarch   10/28
Verifying  : 1:perl-Pod-Simple-3.28-4.el7.noarch   11/28
Verifying  : perl-Time-Local-1.2300-2.el7.noarch   12/28
Verifying  : 4:perl-macros-5.16.3-294.el7_6.x86_64 13/28
Verifying  : 4:perl-5.16.3-294.el7_6.x86_64       14/28
Verifying  : perl-Carp-1.26-244.el7.noarch         15/28
Verifying  : 4:perl-Time-HiRes-1.9725-3.el7.x86_64 16/28
Verifying  : perl-Scalar-List-Utils-1.27-248.el7.x86_64 17/28
Verifying  : perl-Pod-Usage-1.63-3.el7.noarch      18/28
Verifying  : kernel-devel-3.10.0-957.12.2.el7.x86_64 19/28
Verifying  : perl-Encode-2.51-7.el7.x86_64        20/28
Verifying  : perl-Pod-Perldoc-3.20-4.el7.noarch    21/28
Verifying  : perl-podlators-2.5.1-3.el7.noarch     22/28
Verifying  : perl-File-Path-2.09-2.el7.noarch      23/28
Verifying  : perl-threads-1.87-4.el7.x86_64       24/28
Verifying  : perl-Filter-1.49-3.el7.x86_64        25/28
Verifying  : perl-Getopt-Long-2.40-3.el7.noarch    26/28

```

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```

Verifying   : perl-Text-ParseWords-3.29-4.el7.noarch      27/28
Verifying   : perl-Socket-2.010-4.el7.x86_64            28/28

Installed:
  kernel-devel.x86_64 0:3.10.0-957.12.2.el7

Dependency Installed:
  perl.x86_64 4:5.16.3-294.el7_6
  perl-Carp.noarch 0:1.26-244.el7
  perl-Encode.x86_64 0:2.51-7.el7
  perl-Exporter.noarch 0:5.68-3.el7
  perl-File-Path.noarch 0:2.09-2.el7
  perl-File-Temp.noarch 0:0.23.01-3.el7
  perl-Filter.x86_64 0:1.49-3.el7
  perl-Getopt-Long.noarch 0:2.40-3.el7
  perl-HTTP-Tiny.noarch 0:0.033-3.el7
  perl-PathTools.x86_64 0:3.40-5.el7
  perl-Pod-Escapes.noarch 1:1.04-294.el7_6
  perl-Pod-Perldoc.noarch 0:3.20-4.el7
  perl-Pod-Simple.noarch 1:3.28-4.el7
  perl-Pod-Usage.noarch 0:1.63-3.el7
  perl-Scalar-List-Utils.x86_64 0:1.27-248.el7
  perl-Socket.x86_64 0:2.010-4.el7
  perl-Storable.x86_64 0:2.45-3.el7
  perl-Text-ParseWords.noarch 0:3.29-4.el7
  perl-Time-HiRes.x86_64 4:1.9725-3.el7
  perl-Time-Local.noarch 0:1.2300-2.el7
  perl-constant.noarch 0:1.27-2.el7
  perl-libs.x86_64 4:5.16.3-294.el7_6
  perl-macros.x86_64 4:5.16.3-294.el7_6
  perl-parent.noarch 1:0.225-244.el7
  perl-podlators.noarch 0:2.5.1-3.el7
  perl-threads.x86_64 0:1.87-4.el7
  perl-threads-shared.x86_64 0:1.43-6.el7

Complete!
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: ftp.riken.jp
 * extras: ftp.riken.jp
 * updates: ftp.riken.jp
Package 4:perl-5.16.3-294.el7_6.x86_64 already installed and latest version
Package bzip2-1.0.6-13.el7.x86_64 already installed and latest version
Resolving Dependencies
--> Running transaction check
---> Package binutils.x86_64 0:2.27-34.base.el7 will be updated
---> Package binutils.x86_64 0:2.27-41.base.el7_7.2 will be an update
---> Package elfutils-libelf-devel.x86_64 0:0.176-2.el7 will be installed

```

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```

--> Processing Dependency: elfutils-libelf(x86-64) = 0.176-2.el7 for package: elfutils-
↳ libelf-devel-0.176-2.el7.x86_64
--> Processing Dependency: pkgconfig(zlib) for package: elfutils-libelf-devel-0.176-2.
↳ el7.x86_64
---> Package gcc.x86_64 0:4.8.5-39.el7 will be installed
--> Processing Dependency: libgomp = 4.8.5-39.el7 for package: gcc-4.8.5-39.el7.x86_64
--> Processing Dependency: cpp = 4.8.5-39.el7 for package: gcc-4.8.5-39.el7.x86_64
--> Processing Dependency: libgcc >= 4.8.5-39.el7 for package: gcc-4.8.5-39.el7.x86_64
--> Processing Dependency: glibc-devel >= 2.2.90-12 for package: gcc-4.8.5-39.el7.x86_
↳ 64
--> Processing Dependency: libmpfr.so.4()(64bit) for package: gcc-4.8.5-39.el7.x86_64
--> Processing Dependency: libmpc.so.3()(64bit) for package: gcc-4.8.5-39.el7.x86_64
---> Package make.x86_64 1:3.82-23.el7 will be updated
---> Package make.x86_64 1:3.82-24.el7 will be an update
--> Running transaction check
---> Package cpp.x86_64 0:4.8.5-39.el7 will be installed
---> Package elfutils-libelf.x86_64 0:0.172-2.el7 will be updated
--> Processing Dependency: elfutils-libelf(x86-64) = 0.172-2.el7 for package: elfutils-
↳ libs-0.172-2.el7.x86_64
---> Package elfutils-libelf.x86_64 0:0.176-2.el7 will be an update
---> Package glibc-devel.x86_64 0:2.17-292.el7 will be installed
--> Processing Dependency: glibc-headers = 2.17-292.el7 for package: glibc-devel-2.17-
↳ 292.el7.x86_64
--> Processing Dependency: glibc = 2.17-292.el7 for package: glibc-devel-2.17-292.el7.
↳ x86_64
--> Processing Dependency: glibc-headers for package: glibc-devel-2.17-292.el7.x86_64
---> Package libgcc.x86_64 0:4.8.5-36.el7_6.2 will be updated
---> Package libgcc.x86_64 0:4.8.5-39.el7 will be an update
---> Package libgomp.x86_64 0:4.8.5-36.el7_6.2 will be updated
---> Package libgomp.x86_64 0:4.8.5-39.el7 will be an update
---> Package libmpc.x86_64 0:1.0.1-3.el7 will be installed
---> Package mpfr.x86_64 0:3.1.1-4.el7 will be installed
---> Package zlib-devel.x86_64 0:1.2.7-18.el7 will be installed
--> Running transaction check
---> Package elfutils-libs.x86_64 0:0.172-2.el7 will be updated
---> Package elfutils-libs.x86_64 0:0.176-2.el7 will be an update
---> Package glibc.x86_64 0:2.17-260.el7_6.5 will be updated
--> Processing Dependency: glibc = 2.17-260.el7_6.5 for package: glibc-common-2.17-260.
↳ el7_6.5.x86_64
---> Package glibc.x86_64 0:2.17-292.el7 will be an update
---> Package glibc-headers.x86_64 0:2.17-292.el7 will be installed
--> Processing Dependency: kernel-headers >= 2.2.1 for package: glibc-headers-2.17-292.
↳ el7.x86_64
--> Processing Dependency: kernel-headers for package: glibc-headers-2.17-292.el7.x86_
↳ 64
--> Running transaction check
---> Package glibc-common.x86_64 0:2.17-260.el7_6.5 will be updated
---> Package glibc-common.x86_64 0:2.17-292.el7 will be an update

```

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```

---> Package kernel-headers.x86_64 0:3.10.0-1062.12.1.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package                        Arch      Version                               Repository  Size
=====
Installing:
elfutils-libelf-devel         x86_64    0.176-2.el7                          base        39 k
gcc                           x86_64    4.8.5-39.el7                         base        16 M
Updating:
binutils                      x86_64    2.27-41.base.el7_7.2                 updates     5.9 M
make                          x86_64    1:3.82-24.el7                        base        421 k
Installing for dependencies:
cpp                           x86_64    4.8.5-39.el7                         base        5.9 M
glibc-devel                   x86_64    2.17-292.el7                        base        1.1 M
glibc-headers                 x86_64    2.17-292.el7                        base        687 k
kernel-headers                x86_64    3.10.0-1062.12.1.el7                 updates     8.7 M
libmpc                        x86_64    1.0.1-3.el7                         base        51 k
mpfr                          x86_64    3.1.1-4.el7                         base        203 k
zlib-devel                    x86_64    1.2.7-18.el7                        base        50 k
Updating for dependencies:
elfutils-libelf               x86_64    0.176-2.el7                          base        194 k
elfutils-libs                 x86_64    0.176-2.el7                          base        291 k
glibc                         x86_64    2.17-292.el7                        base        3.6 M
glibc-common                  x86_64    2.17-292.el7                        base        11 M
libgcc                        x86_64    4.8.5-39.el7                         base        102 k
libgomp                       x86_64    4.8.5-39.el7                         base        158 k

Transaction Summary
=====
Install  2 Packages (+7 Dependent packages)
Upgrade  2 Packages (+6 Dependent packages)

Total download size: 55 M
Downloading packages:
No Presto metadata available for base
No Presto metadata available for updates
-----
Total                               11 MB/s |  55 MB  00:04
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Updating   : libgcc-4.8.5-39.el7.x86_64                                1/25
  Updating   : glibc-2.17-292.el7.x86_64                                2/25
warning: /etc/nsswitch.conf created as /etc/nsswitch.conf.rpmnew

```

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```

Updating      : glibc-common-2.17-292.el7.x86_64          3/25
Installing    : mpfr-3.1.1-4.el7.x86_64                  4/25
Installing    : libmpc-1.0.1-3.el7.x86_64                 5/25
Updating      : elfutils-libelf-0.176-2.el7.x86_64        6/25
Installing    : cpp-4.8.5-39.el7.x86_64                   7/25
Updating      : binutils-2.27-41.base.el7_7.2.x86_64      8/25
Updating      : libgomp-4.8.5-39.el7.x86_64                9/25
Installing    : kernel-headers-3.10.0-1062.12.1.el7.x86_64 10/25
Installing    : glibc-headers-2.17-292.el7.x86_64         11/25
Installing    : glibc-devel-2.17-292.el7.x86_64           12/25
Installing    : zlib-devel-1.2.7-18.el7.x86_64            13/25
Installing    : elfutils-libelf-devel-0.176-2.el7.x86_64  14/25
Installing    : gcc-4.8.5-39.el7.x86_64                   15/25
Updating      : elfutils-libs-0.176-2.el7.x86_64          16/25
Updating      : 1:make-3.82-24.el7.x86_64                 17/25
Cleanup       : elfutils-libs-0.172-2.el7.x86_64          18/25
Cleanup       : elfutils-libelf-0.172-2.el7.x86_64        19/25
Cleanup       : libgomp-4.8.5-36.el7_6.2.x86_64           20/25
Cleanup       : 1:make-3.82-23.el7.x86_64                 21/25
Cleanup       : binutils-2.27-34.base.el7.x86_64          22/25
Cleanup       : glibc-common-2.17-260.el7_6.5.x86_64       23/25
Cleanup       : glibc-2.17-260.el7_6.5.x86_64             24/25
Cleanup       : libgcc-4.8.5-36.el7_6.2.x86_64            25/25
Verifying     : binutils-2.27-41.base.el7_7.2.x86_64      1/25
Verifying     : mpfr-3.1.1-4.el7.x86_64                   2/25
Verifying     : gcc-4.8.5-39.el7.x86_64                   3/25
Verifying     : zlib-devel-1.2.7-18.el7.x86_64            4/25
Verifying     : 1:make-3.82-24.el7.x86_64                 5/25
Verifying     : libgomp-4.8.5-39.el7.x86_64                6/25
Verifying     : glibc-common-2.17-292.el7.x86_64          7/25
Verifying     : libgcc-4.8.5-39.el7.x86_64                 8/25
Verifying     : cpp-4.8.5-39.el7.x86_64                   9/25
Verifying     : elfutils-libelf-devel-0.176-2.el7.x86_64  10/25
Verifying     : libmpc-1.0.1-3.el7.x86_64                 11/25
Verifying     : glibc-2.17-292.el7.x86_64                 12/25
Verifying     : kernel-headers-3.10.0-1062.12.1.el7.x86_64 13/25
Verifying     : glibc-devel-2.17-292.el7.x86_64           14/25
Verifying     : elfutils-libs-0.176-2.el7.x86_64          15/25
Verifying     : elfutils-libelf-0.176-2.el7.x86_64        16/25
Verifying     : glibc-headers-2.17-292.el7.x86_64         17/25
Verifying     : binutils-2.27-34.base.el7.x86_64          18/25
Verifying     : libgcc-4.8.5-36.el7_6.2.x86_64           19/25
Verifying     : libgomp-4.8.5-36.el7_6.2.x86_64           20/25
Verifying     : glibc-common-2.17-260.el7_6.5.x86_64       21/25
Verifying     : glibc-2.17-260.el7_6.5.x86_64             22/25
Verifying     : elfutils-libelf-0.172-2.el7.x86_64        23/25
Verifying     : 1:make-3.82-23.el7.x86_64                 24/25
Verifying     : elfutils-libs-0.172-2.el7.x86_64          25/25

```

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```
Installed:
  elfutils-libelf-devel.x86_64 0:0.176-2.el7      gcc.x86_64 0:4.8.5-39.el7
```

```
Dependency Installed:
  cpp.x86_64 0:4.8.5-39.el7
  glibc-devel.x86_64 0:2.17-292.el7
  glibc-headers.x86_64 0:2.17-292.el7
  kernel-headers.x86_64 0:3.10.0-1062.12.1.el7
  libmpc.x86_64 0:1.0.1-3.el7
  mpfr.x86_64 0:3.1.1-4.el7
  zlib-devel.x86_64 0:1.2.7-18.el7
```

```
Updated:
  binutils.x86_64 0:2.27-41.base.el7_7.2      make.x86_64 1:3.82-24.el7
```

```
Dependency Updated:
  elfutils-libelf.x86_64 0:0.176-2.el7      elfutils-libs.x86_64 0:0.176-2.el7
  glibc.x86_64 0:2.17-292.el7              glibc-common.x86_64 0:2.17-292.el7
  libgcc.x86_64 0:4.8.5-39.el7             libgomp.x86_64 0:4.8.5-39.el7
```

Complete!

Copy iso file C:\Program Files\Oracle\VirtualBox\VBBoxGuestAdditions.iso into the box /

↪tmp/VBBoxGuestAdditions.iso

Mounting Virtualbox Guest Additions ISO to: /mnt

mount: /dev/loop0 is write-protected, mounting read-only

Installing Virtualbox Guest Additions 6.1.2 - guest version is unknown

Verifying archive integrity... All good.

Uncompressing VirtualBox 6.1.2 Guest Additions for Linux.....

VirtualBox Guest Additions installer

Copying additional installer modules ...

Installing additional modules ...

VirtualBox Guest Additions: Starting.

VirtualBox Guest Additions: Building the VirtualBox Guest Additions kernel modules. This may take a while.

VirtualBox Guest Additions: To build modules for other installed kernels, run

VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup <version>

VirtualBox Guest Additions: or

VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup all

VirtualBox Guest Additions: Building the modules for kernel

3.10.0-957.12.2.el7.x86_64.

Redirecting to /bin/systemctl start vboxadd.service

Redirecting to /bin/systemctl start vboxadd-service.service

Unmounting Virtualbox Guest Additions ISO from: /mnt

PS C:\vagrant\my_centos>

PS C:\vagrant\my_centos> vagrant halt

==> default: Attempting graceful shutdown of VM...

PS C:\vagrant\my_centos>

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```

PS C:\vagrant\my_centos> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Checking if box 'centos/7' version '1905.1' is up to date...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: bridged
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default: Warning: Connection aborted. Retrying...
    default: Warning: Connection reset. Retrying...
    default: Warning: Remote connection disconnect. Retrying...
==> default: Machine booted and ready!
[default] GuestAdditions 6.1.2 running --- OK.
==> default: Checking for guest additions in VM...
==> default: Setting hostname...
==> default: Configuring and enabling network interfaces...
==> default: Rsyncing folder: /cygdrive/c/vagrant/my_centos/ => /vagrant
==> default: Machine already provisioned. Run `vagrant provision` or use the `--
↳provision`
==> default: flag to force provisioning. Provisioners marked to run always will still
↳run.
PS C:\vagrant\my_centos>
PS C:\vagrant\my_centos> vagrant halt
==> default: Attempting graceful shutdown of VM...
PS C:\vagrant\my_centos>

```

2.11.2 VB Guest Additions の手動インストール

何らかの理由で **プラグインを使用した VB Guest Additions のインストール** が行えないときは仮想マシンに `vagrant ssh` コマンドで接続し、次のコマンドを実行します。

VirtualBox 6.1.2 用です。

```

sudo yum -y update
sudo yum -y install wget
sudo yum -y groupinstall 'Development tools'

```

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```
wget http://download.virtualbox.org/virtualbox/6.1.2/VBoxGuestAdditions_6.1.2.iso
sudo mkdir /media/iso
sudo shutdown -r now
sudo yum -y install kernel-devel
sudo mount -o loop,ro VBoxGuestAdditions_6.1.2.iso /media/iso
sudo sh /media/iso/VBoxLinuxAdditions.run
```

重要: VB Guest Additions は VirtualBox のバージョンごとに用意されています。下記の URL でお使いの Virtual-Box のバージョンにあった VB Guest Additions をご使用ください。

<http://download.virtualbox.org/virtualbox/>

2.11.3 IEEE が管理しているプライベート用 MAC アドレス (2020 年 2 月 9 日 確認)

00-00-6C
00-01-01
00-05-78
00-0B-18
00-0B-F4
00-0C-53
00-0D-58
00-0D-A7
00-0D-C2
00-0D-F2
00-0E-17
00-0E-22
00-0E-2A
00-0E-EF
00-0F-09
00-16-B4
00-17-61
00-18-25
00-20-67
00-22-1C
00-22-F1

00-23-4A
00-23-8C
00-23-F7
00-24-19
00-24-FB
00-25-9D
00-25-DF
00-26-9F
00-50-47
00-50-79
00-50-C7
00-84-ED
00-86-A0
00-A0-54
00-A0-85
00-CB-00
04-18-B6
0C-81-12
10-00-00
10-AE-60
10-B7-13
11-00-AA
11-11-11
14-07-08
14-6E-0A
18-42-1D
1C-F4-CA
20-5B-2A
20-D1-60
24-33-6C
24-BF-74
28-EF-01
30-27-CF
38-AF-D0
3C-B8-7A

48-76-04
48-D3-5D
48-F3-17
50-E1-4A
54-4E-45
58-09-43
58-6E-D6
60-8C-DF
60-96-20
68-E1-66
70-6F-81
78-F9-44
7C-50-DA
7C-E4-AA
88-B4-36
8C-84-01
8C-E7-48
90-6F-18
98-0E-E4
9C-93-E4
A4-68-BC
A4-A6-A9
AC-DE-48
AC-F8-5C
B0-25-AA
B0-EC-E1
B0-FE-BD
B4-E1-EB
BC-D7-67
C0-2E-26
C8-AA-CC
CC-3A-DF
D8-5D-FB
DC-70-14
E0-CB-1D

E4-F1-4C

E8-04-10

E8-9E-0C

F0-4F-7C

F0-A2-25

F8-C2-49

2.12 改版履歴

- 2020-02-14 初版作成 / 公開