Installing the DevOps Toolkit with orchestrator bundle

Use this procedure to install the DevOps Toolkit and set up the development environment within your Vagrant box bundle. This procedure sets up **devops-toolkit-orch-17.02.0.box** which includes **bpocore-dev** and **orchestrate-ui-dev** versions.

The high-level steps to install and use the DevOps Toolkit with orchestrator bundle are:

- Complete the Prerequisites

- Set up the DevOps Toolkit in Vagrant

- Customize your development environment

- Create a shared directory

- Start the VM and connect to the Vagrant development environment

- Test Blue Planet development mode and onboard the RA

- Make a Blue Planet solution

Before you start

This procedure assumes you have:

- Read the DevOps Toolkit Release Notes. You can the find the Release Notes on the Ciena Blue Planet DevOps Exchange page.

- Downloaded and installed:

    - Vagrant

    - VirtualBox with VB Guest Additions

- Access to the DevOps toolkit bundle.

- Hardware virtualization enabled on your PC. See your PC documentation for instructions on enabling hardware virtualization through the BIOS. If virtualization is not enabled, you may see an error like the one below when you boot the VM directly in VirtualBox.

```
VT-x/AMD-V hardware acceleration is not available on your system. Your 64-bit guest
will fail to detect a 64-bit CPU and will not be able to boot.
```

Set up the DevOps Toolkit in Vagrant

On your local computer, perform the following steps to set up the DevOps Toolkit:

1. Open a terminal or command-line window.

2. Navigate to your home directory or another directory that you can easily access.

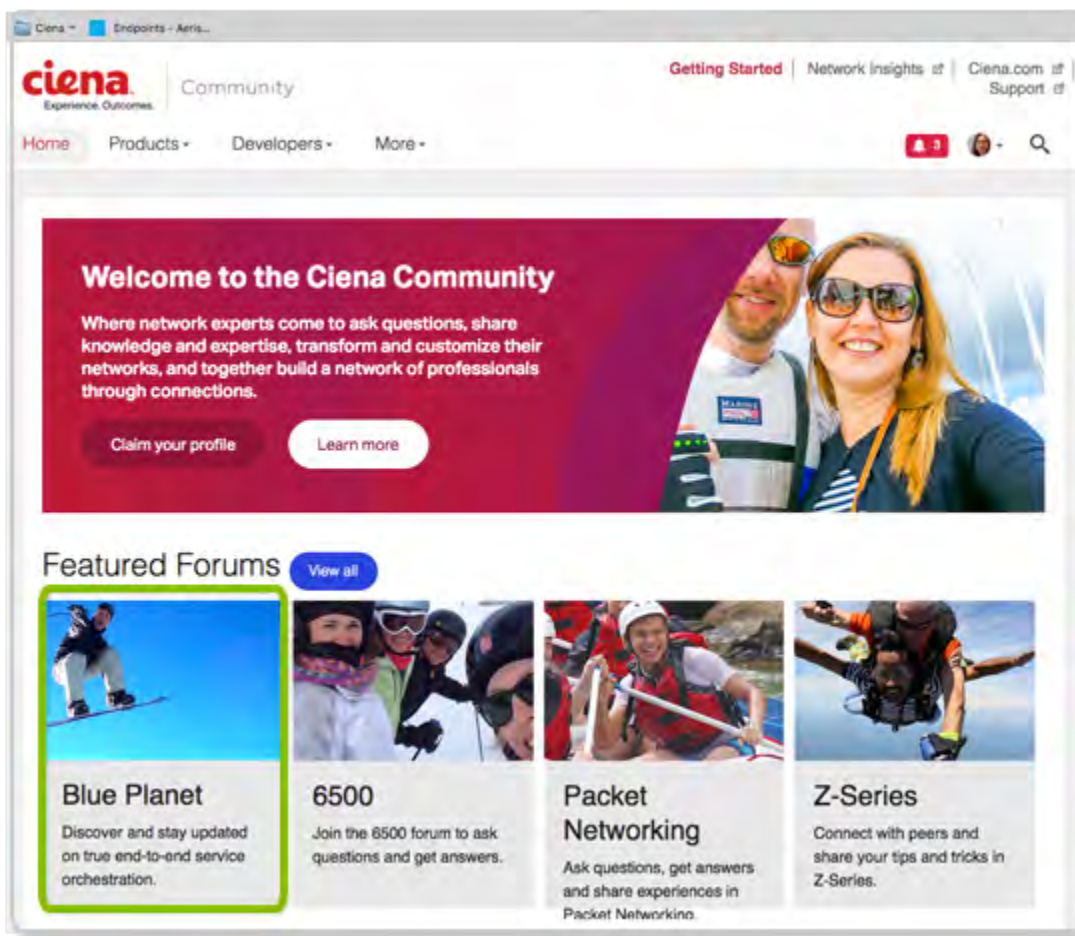3. Create a DevOps Toolkit directory. This example creates `ra_devops_toolkit`.

```
$ mkdir ra_devops_toolkit
```

Alternatively, you can use Windows Explorer or Mac Finder to create the directory.

4. Open another terminal window and navigate to the `ra_devops_toolkit` (the directory you created) directory. This is where you install the DevOps Toolkit.

```
$ cd ra_devops_toolkit
ra_devops_toolkit $
```
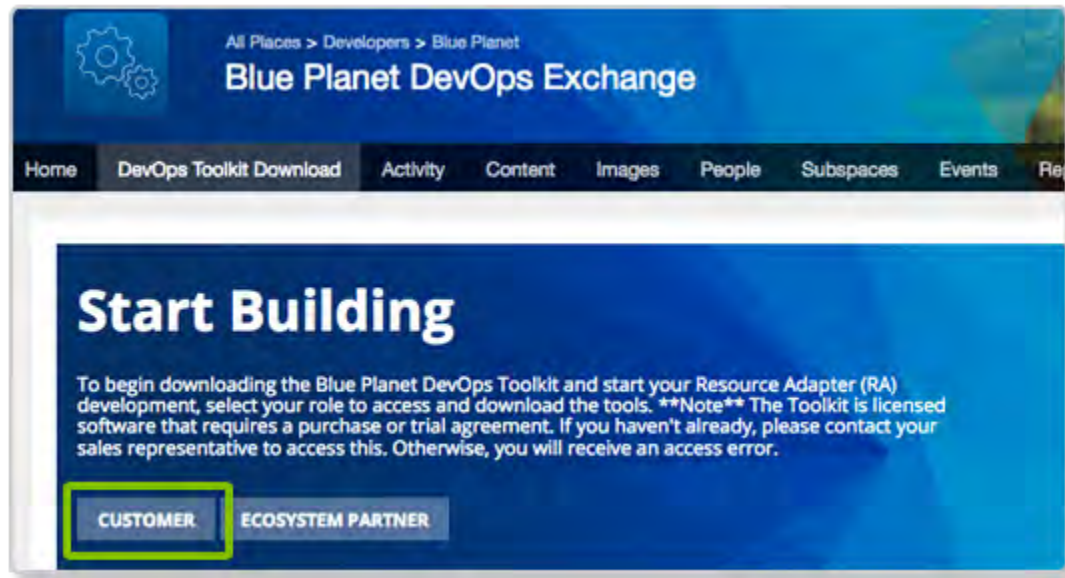
5. Go to the Ciena Community website and log in to the **Blue Planet DevOps Exchange**.

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6. Navigate to and select the **DevOps Toolkit Download** page.
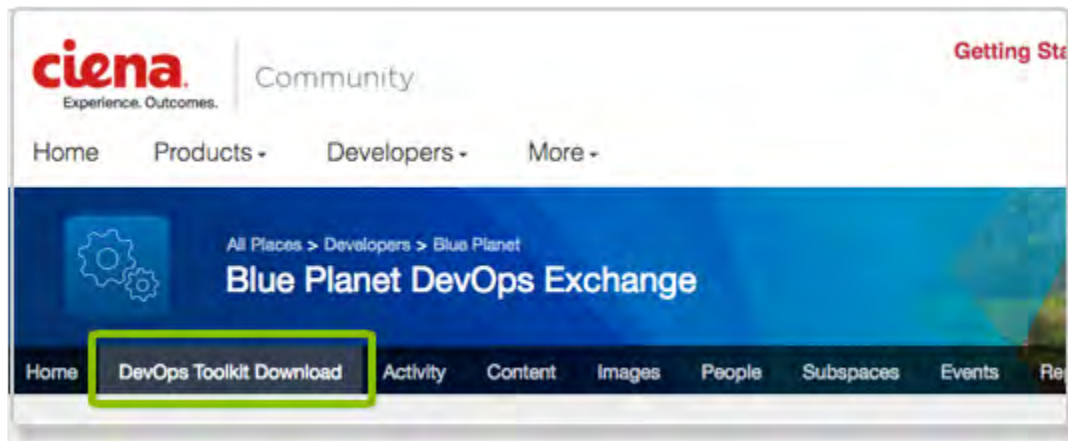
7. Select the **CUSTOMER** toolkit bundle and download.

8. Place your toolkit in the directory that you created. This examples uses `ra_devops_toolkit`.

9. Run the `vagrant init` command to create a Vagrantfile in the directory. This example creates toolkit version 17.02.0.

```
vagrant init ra-devops-17.02.0 devops-toolkit-orch-17.02.00.box
```

where:

- `ra-devops-17.02.0` is a Vagrant box created by the `vagrant init` command.
- `vagrant` creates a Vagrantfile in the directory. For details on Vagrantfiles, see Vagrantfiles.
- `devops-toolkit-orch-17.02.00.box` is the exact name of the toolkit bundle that you downloaded from the Blue Planet DevOps Exchange page.

10. Install VirtualBox guest additions:

```
$ vagrant plugin install vagrant-vbguest
Installing the 'vagrant-vbguest' plugin. This can take a few minutes...
Installed the plugin 'vagrant-vbguest (0.13.0)'!
```

Customize your development environment

Customize your environment by editing the Vagrantfile. The Vagrantfile contains settings for your virtual machine. This procedure provides the minimum customization required to run the DevOps Toolkit.

You can find out more about customizing VirtualBox at VBoxManage.

NOTE	Do not use Word, WordPad or an editor with "smart quotes" to edit the Vagrantfile. Ciena recommends using Notepad, Notepad++, Sublime Text, or an IDE.

To customize, do the following:

1. Open the Vagrantfile in a text editor like Sublime Text or Atom.

2. Right **before** the last line containing `end`, paste the following:

```
config.vm.network "private_network", ip: "192.168.33.10"
config.vm.provider "virtualbox" do |vb|
  vb.customize ["modifyvm", :id, "--memory", "4096"]
end
config.vm.synced_folder "./shared", "/home/vagrant/shared", type: "nfs"
config.vm.synced_folder ".", "/vagrant", disabled: true
```

NOTE	Make sure that this subnet and IP address are not already used on the network.

3. Save and close the Vagrantfile.

Create a shared directory

Follow these steps to create a directory for your DevOps Toolkit files:

1. Navigate to the DevOps Tookit directory.

2. Create a shared directory.

NOTE	You can also use Windows Explorer or Mac Finder to create the directory and copy files to the directory.

```
$ mkdir shared
```

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3. (Optional) Copy your previous DevOps Toolkit projects into the new `shared` directory.

```
$ cp -r <ra_devops_toolkit-old>/shared/ <ra_devops_toolkit-new>/shared/
```

Start the VM and connect to the Vagrant development environment

Follow these steps to start your Vagrant development environment (or virtual machine):

1. Navigate to your DevOps Toolkit directory and start your virtual machine (VM) with the `vagrant up`. You will be prompted for a password. Use the password for the host machine.

NOTE	If running Windows, start cmd.exe (DOS Prompt) with administrative privileges.

```
$ vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Box 'ra-devops' could not be found. Attempting to find and install...
    default: Box Provider: virtualbox
    default: Box Version: >= 0
==> default: Box file was not detected as metadata. Adding it directly...
==> default: Adding box 'ra-devops' (v0) for provider: virtualbox
    default: Unpacking necessary files from:
file:///Users/irogers/ra_devops_toolkit/devops-toolkit-orch-17.02.0.box
==> default: Successfully added box 'ra-devops' (v0) for 'virtualbox'!
 .
 .
 .
Going on, assuming VBoxService is correct...
==> default: Checking for guest additions in VM...
    default: The guest additions on this VM do not match the installed version of
    default: VirtualBox! In most cases this is fine, but in rare cases it can
    default: prevent things such as shared folders from working properly. If you see
    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
    default:
    default: Guest Additions Version: 4.3.36
    default: VirtualBox Version: 5.1
==> default: Configuring and enabling network interfaces...
==> default: Exporting NFS shared folders...
==> default: Preparing to edit /etc/exports. Administrator privileges will be
required...
 Password:
```

NOTE	*Keep in mind* • If you are using a network file system (NFS) to share the folder, Vagrant may prompt you for the host password. • Vagrant displays several status messages during VirtualBox startup. • An error message displays if hardware virtualization is not enabled in the BIOS of your PC.

2. Connect to your VM from the host through SSH (or Cygwin on a Windows machine).

    ```
    $ vagrant ssh
    vagrant@vagrant:~$
    ```

    The prompt changes to the VM Ubuntu prompt and indicates that you are in the Vagrant development environment.

Test Blue Planet development mode and onboard the RA

To test the development mode of Blue Planet orchestrator and to onboard the sample RA:

1. From another host terminal, use ssh to log in to the VM.

    ```
    $ vagrant ssh
    ```

2. Start the Blue Planet core development platform with the following Docker command. In this guide, the command listed may wrap to more than one line, but you must enter the command as a single line.

NOTE	Run 'docker images' and replace the <version> in the command below with the bpocore-dev image TAG number

    ```
    docker run --name bpocore-dev -it --rm --publish 8181:8181
    artifactory.ciena.com/blueplanet/bpocore-dev:<version>
    ```

3. Open another terminal window and use `ssh` to log in to the Vagrant development environment.

    ```
    $ vagrant ssh
    ```

4. Start the Orchestrate UI with the following Docker command. In this guide, the command listed may wrap to more than one line, but you must enter the command as a single line.

NOTE	Run 'docker images' and replace the <version> in the command below with the frost-orchestrate-ui-dev image TAG number

    ```
    docker run --rm -it -p 9980:80 --name orchestrate-ui-dev --link bpocore-dev:bpocore-dev
    artifactory.ciena.com/blueplanet/frost-orchestrate-ui-dev:<version>
    ```

NOTE	Leave this terminal window open. No return prompt displays.

5. In a web browser, access 192.168.33.10:9980/orchestrate/ (http://192.168.33.10:9980/orchestrate/) to view the Blue Planet Orchestrate dashboard.

6. To prepare for RA onboarding, open another terminal window and use ssh to connect to the VM.

```
$ vagrant ssh
```

7. Generate an SSH key. You do not need a password. When prompted, press **return** and accept the defaults.

```
$ ssh-keygen -t rsa -C "your_email@yourcompany.com"
```

where, `your_email@yourcompany.com` is your email address.

8. Set up Git global configuration on your machine.

```
$ git config --global user.email "your_email@yourcompany.com"
$ git config --global user.name "RA Developer"
```

where, `your_email@yourcompany.com` is your email address and `ra_developer_name` is your name.

9. Go to the directory containing the sample RA, and prepare to run the example RA.

```
$ cd examples/example-ra-cisco
```