

rBuilder QuickStart Guide

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rBuilder 5 Edition

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Why rBuilder?

Why use rBuilder?

Let's face it: packaging, deploying, and maintaining applications is time-consuming, and you are busy!

This guide introduces you to how rBuilder is going to save you time by sparing you these issues.

Think this is some new super-power?

Sound like a heroic endeavor?

Well... prepare to be the IT Hero for your company!

1 Install rBuilder Locally

If you're using the hosted rBuilder Online at <http://www.rpath.org>, rejoice in skipping this section and jumping to [Section 3, Sign Up and Sign In](#). If you have downloaded the free install for rBuilder, you'll need the information here to set up rBuilder on your local hardware.



Even though rBuilder is the hot tool for getting into virtualization, rBuilder itself requires a hardware install because it uses a hypervisor and virtual machines to handle processes.

Make sure your hardware and network meets the following minimum requirements:

CPU	Server-class 64-bit x86 architecture with one or more 2+ GHz processors*
RAM	Minimum 4 GB, recommended 8 GB
Physical disks	250 GB high-performance storage** (recommended more to allow for growth over time)
Removable media	Configuration to boot from install media (e.g. CD/DVD drive)
Network configuration	Ethernet interface with either a static or dynamic IP address accessible by a static fully-qualified domain name (FQDN)
	Ability to access the rBuilder by ports 80 and 443
	Ability to contact rPath repositories using these FQDNs: <i>products.rpath.com, rap.rpath.com, conary.rpath.com, centos.rpath.com</i>

* rBuilder may not operate properly with ICH9 chipsets. Check your hardware manufacturer to determine if your hardware uses this chipset.

** rBuilder will **automatically partition and use all attached storage devices during its install**, so only attach those devices you wish to use for rBuilder.

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Install your local rBuilder with the following steps:

1. Create your install media from the rBuilder ISO, and then boot to that media. Press **Enter** at the “boot:” prompt, and click **Next** in the graphical installer.
2. In the *Warning* dialog, click **Yes** to confirm that you are prepared to delete all partitions and data.



This includes all attached storage devices!

3. When the install finishes, confirm that the system reboots and your attached display shows the **rBuilder console**.
4. In a web browser from another system on the network, open the link indicated in the rBuilder console, using your reserved FQDN in place of the IP address (such as *https://rbuilder.example.com:8003*). If necessary, add security certificate exceptions for your browser for this secure HTTP access.
5. Log in to rBuilder's rPA interface with its default credentials (username=*admin*, password=*password*). Then, complete the initial setup steps with information about your company and your rBuilder:
 - 5.1. Read the terms of service and click **Accept**.
 - 5.2. Change the current rPA user's password and click **Save**.
 - 5.3. Confirm with your IT staff whether you need to use an HTTP or HTTPS proxies. If so, enter that information here. Click **Save**.
 - 5.4. Complete the credentials and email address for an initial administrator account for use in rBuilder's main interface, and type a short catchy *Default namespace* value for your company (such as “rpath” for rPath, or “mec” for My Enterprise Company). Click **Continue**.
 - 5.5. When the initialization is complete, click **Continue** and confirm your browser goes to the main rBuilder interface.
6. Use the new administrator account you just created to log in to rBuilder. If necessary, add security certificate exceptions for your browser for this secure HTTP access.
7. Click **Site administration**, and then click **More Administrative Options**. Verify that your browser opens a separate window or tab with the rBuilder rPA login. Log in as **admin** with the new password you created.

8. Click **Updates** on the left, and click to **Check for Updates**. When the check is finished, click **OK** to continue, and then click to **Apply Now** if an update is shown to be available.



Do not skip updating your rBuilder before using it. rPath is constantly releasing features and fixes to improve your appliance development process.

9. After the rBuilder update is complete, click **Configuration** on the left, and click **Configure Notification** from the expanded menu. For the mail relay (SMTP) server, confirm with your IT staff that rBuilder can send email using SMTP on your network, *required* for new users to confirm their rBuilder account. Determine with IT staff whether rBuilder should send email using its own SMTP service, or whether you need to configure rBuilder here to use an existing SMTP server. If you need to add a server, complete the text boxes here and click **Save**.
10. Close the browser window or tab with rBuilder's rPA interface.

2 Set Up an EC2 Target for rBuilder

The **rPath Management Console (rMC)** in rBuilder is used to launch and manage your virtual appliances. rBuilder uploads your appliances to *targets*, which are hypervisors elsewhere on the network (such as a VMware ESX Server) or Internet (such as Amazon EC2).

For this guide, you need to add a *target* for Amazon Elastic Compute Cloud (EC2) so that rBuilder can upload each Amazon Machine Image (AMI) generated by your rBuilder users.

Add a target for EC2 using the following steps:

1. **If you don't already have an Amazon Web Services account**, visit <http://aws.amazon.com> and click **Sign Up Now**. There is a brief turn-around time that requires you to associate an Amazon.com account with AWS.
2. **To add EC2 access to your AWS account**, go to <http://aws.amazon.com/ec2/>, sign in with your AWS account, and click **Sign Up for Amazon EC2**. After you to set up a form of payment with Amazon, you are ready to give rBuilder your new EC2 information.
3. Confirm you are signed in as the rBuilder site administrator you created during your setup.
4. Click **rPath Management Console**. Verify the rMC opens in another browser window or tab, prompting you to add one or more *targets*.

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- From the drop-down list in the *Add a Target* dialog, select **ec2**. Then, complete the information for each text box; click each text box name to see help about each item, and note the following:
 - To find and copy all your EC2 credentials, go to <http://aws.amazon.com>, and click **Your Account --> Access Identifiers**. Your account number, keys, and certificate are all available from that page.
 - As indicated in the help text, you can choose any name for *S3 Bucket*, but it must be globally unique against all buckets in Amazon's S3 where the EC2 AMIs are stored.
- Close the rMC browser window or tab, and sign out of the main rBuilder interface as the site administrator. Then, use the information in the next section to create a new account for your appliance development work.

3 Sign Up and Sign In

If you are using rBuilder Online (rBO) and already have an account, you can just sign to rBO in with those existing credentials and skip to the next section. Otherwise, create an rBuilder account (other than your site administrator) and sign in.



Find:

[Sign In](#) [Create Account](#)

Click **Create account**, complete the form (email address *must* be valid), and click **Create**. rBuilder sends you a confirmation email with a link, and you'll need to confirm your account from this email before continuing.

When your account is confirmed, click **new UI beta** on the confirmation page to launch the new rBuilder user interface covered in this guide. If desired, click the watch the one-minute intro video.

Sign in to rBuilder with the new account before going on to the next section.



If you have an rBO account, a locally-installed rBuilder will not have any ties to your rBO account. The local rBuilder has its own user database completely separate from rBO.

4 Set EC2 Credentials for Your rBuilder User

For this guide, you must associate your own Amazon Elastic Compute Cloud (EC2) credentials for your developer account in rBuilder. This allows you to run *instances* of your appliance in the cloud at the very modest EC2 pay scale (only pennies per hour).

If you are using rBuilder Online, rPath has you covered for the uploading your appliance images to Amazon EC2. In rBO, your credentials are only needed for launching instances of your appliance in the rPath Management Console (rMC). If you don't already have an Amazon Web Services account with the EC2 service, use the information in the first two steps in [Section 2, Set Up an EC2 Target for rBuilder](#). To find and copy all your EC2 credentials, go to <http://aws.amazon.com>, and click **Your Account --> Access Identifiers**.

If you are using a local rBuilder install, and you have set up your EC2 target, rBuilder automatically uploads your AMIs to EC2 based on that target. However, each new user on your rBuilder also has to enter EC2 credentials to launch instances of their appliances in the rMC.

While signed in with your new account from [Section 3, Sign Up and Sign In](#), use the following steps to set your EC2 credentials for that account:

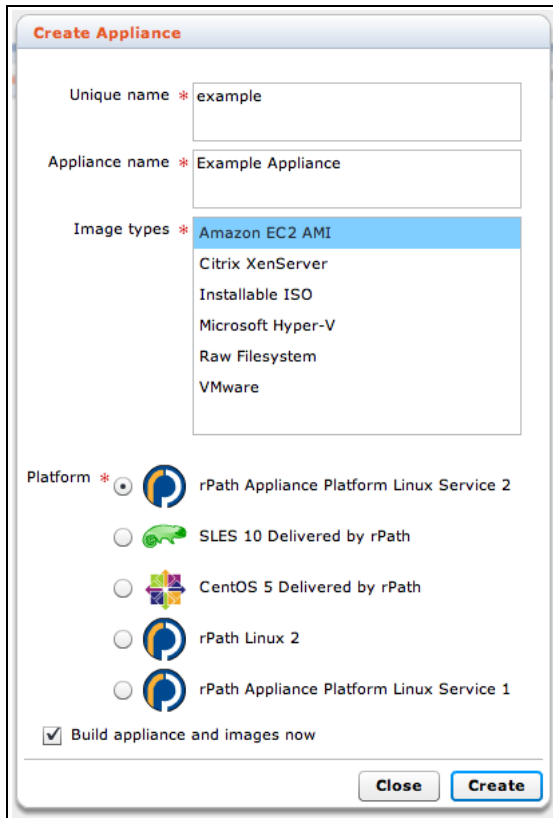
1. Click **rPath Management Console**.
2. In the rMC, complete the three lines for your Amazon EC2 credentials. In a local rBuilder install, these can be the same account number and keys you used for the EC2 target, or they can be completely different.
3. Click **Save**.
4. Return to the browser window or tab with your main rBuilder interface.

5 Create Your Appliance

Ready to dive in? Click the green “plus” (+) under *Appliances* (in the *Resource* panel on the left).

Information you provide in the *Create Appliance Panel* defines the operating system and deployment scenarios for your appliance. rBuilder does the dirty work of pulling together the appliance based on this information, freeing you to concentrate on your application, middleware, and customizations.

Before you get too anxious, check out these quick hints about the items in the form:



Unique Name: This string permanently identifies your appliance product in rBuilder. Choose something you are willing to type frequently in your later development work.

Appliance Name: This is the name as you might refer to it on your website or to potential customers. Unlike the “Unique Name,” you can change this later if you need to.

Image Types: For this QuickStart, just select **Amazon EC2 AMI**. The *image types* are the environments in which you expect to deploy your appliance. You can also Ctrl+click to select multiple image types.

Platform: For this QuickStart, use **rPath Linux 2**. The *platform* is the operating system that runs under your application software on the appliance. The options vary between rBO and a local install. Some are disabled until you coordinate access with rPath, based on showing your license for that OS. For more information, contact rPath (<http://www.rpath.com/corp/contact-us>).

Leave the checkbox checked for *Builder appliance and images now*, and click **Create**. rBuilder should open your *Workspace* for the new appliance and launch the following automatic sequence of events:

1 Create a repository for your appliance software, and save a “definition” based on your form entries

2 Build your first appliance with your selected platform as the base OS, plus management tools such as the rPath Platform Agent (3-5 min)

3 Generate images for deploying the appliance based on the images defined here (15+ min depending on number of images; longer the first time a local rBuilder does this)

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While all that is happening, note that there are three views of the main panel, corresponding to those buttons in the upper right: *Images*, *Workspace*, and *Repository*. This guide concentrates on the *Workspace* view.

Before you go any further, note that these are the three big things you are managing for your appliance:

Builds	<ul style="list-style-type: none">● A binary item created by rBuilder that represents all the software installed and managed on your appliance● Created before anything else● Managed in the <i>Workspace</i> view
Images	<ul style="list-style-type: none">● ISO or virtual machine targeted to one of your deployment needs● One or more can be generated from a single appliance build● Generated in the <i>Workspace</i> view● Managed in both the <i>Workspace</i> and <i>Images</i> views
Releases	<ul style="list-style-type: none">● Created to identify one or more images for release● Managed and published in the <i>Images</i> view

6 Launch Your First Appliance Image

After your images are generated, you can immediately launch and manage your virtual machines in the *rPath Management Console*:

In rBuilder Online, this includes your Amazon Machine Images (AMIs) launched in Amazon EC2.


In the rBuilder free download, not only can you launch your AMIs, but you can also connect to your local VMware ESX Server or Citrix Xen Server and use the *rPath Management Console* to launch and manage the virtual machines you generated in rBuilder.

rBuilder saves you time yet again! It creates your AMI as part of your first appliance images, and it automatically uploads that AMI to Amazon.com so that you (and anyone else) can launch any number of instances of that image in EC2. Each *instance* of your AMI is a separate running system:

Same AMI ID from rBuilder	Different sample instances of that same AMI
ami-3309ed5a	i-7cd1f461 at <i>ec2-23-202-53-5.compute-1.amazon.com</i>
	i-23ag531d at <i>ec2-18-101-175-205.compute-1.amazon.com</i>
	i-f43bd179 at <i>ec2-75-202-141-3.compute-1.amazon.com</i>

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Launch an instance of your AMI with the following steps:

1. In the appliance workspace, mouse-over the EC2 image info to see its action buttons, and click the green launch icon ()
2. Verify that rBuilder launches the rPath Management Console where you previously entered your AWS credentials. If you skipped the steps in *Section 4, Tell rBuilder About Your EC2 Account*, you are prompted to enter your EC2 credentials before you can launch any instances.
3. Leave the form as you see it and click **Launch**. (There are some advanced options you may want to adjust in future launches by using the arrow button to expand the form.) Verify your rPath Management Console refreshes to show the new *instance* booting.
4. Take a moment to marvel at having built an appliance and launched an instance of that appliance in the cloud. *Do a happy dance!*

Ready to stitch your initials on that IT Hero cape yet? Before you do, be sure to continue working through this guide to see how to access and manage those cloud instances, and how to add your application to take advantage of this new cloud vehicle.

7 Manage Your Virtual Infrastructure in the rPath Management Console

Click that *Instance ID* for your EC2 instance in the rPath Management Console, and check out the buttons at the bottom of the console while it's selected. Here's a what those buttons can do for you:

Info	Shutdown	Connect	Manage
Display a dialog with EC2 instance information for the instance. If you want to copy and paste the <i>Public DNS Address</i> value or any other information, use this <i>Info</i> dialog.	Shut down that instance. ● If you are not familiar with EC2, note that image data is transient; the virtual disk disappears with all the data when the image is stopped.	Launch a new browser window that opens: <i>http://<instance_address></i> When the appliance is running a web application, this should launch its main interface in a new window.	Launch the rPath Platform Agent on your appliance. This feature is included automatically when you build the appliance in rBuilder. It accesses the instance by HTTPS on port 8003.

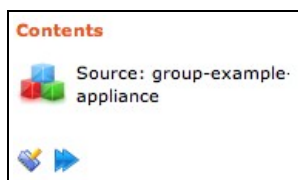
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Use these next steps to launch, log in, and examine the management interface for the EC2 instance of your appliance:

1. With your new instance selected, click **Manage**. If your browser prevents opening pop-ups, adjust your preferences to add rBuilder to your pop-up exceptions and try again. Also, if your browser indicates an issue trusting the site or certificate, add an exception for it.
2. In the rPath Platform Agent (rPA) interface, log in with these default credentials:
User name: **admin**
Password: **password**
3. Step through the initial configuration wizard: (1) change the *admin* password, (2) leave the defaults for everything else before the backup configuration, and then (3) disable backups.
4. When you have finished the wizard, click through the tasks on the left side of the interface to get acquainted with rPA's built-in management tasks. When you complete this guide, and you are ready to customize rPA, see the links in [Section 9, How To Go Forward From Here](#).
5. Close the rPA interface by closing the browser window (or tab), and return to the rBuilder main interface to continue.

8 Customize, Tweak, and Update

Your ongoing appliance development starts in the *Appliance contents* box in your Workspace:





Edit 	Build 
Opens an edit interface to tweak appliance contents, including uploading software for rBuilder to package and include as part of your appliance	Launches a new build of your appliance contents; after the new build, you can also choose to generate new images if you need them, too, or just have existing images check in to rBuilder for updates

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Prep yourself for your editing work with some quick facts:

- The components that make up your appliance are outlined in a *recipe*, which rBuilder uses as instructions for building your appliance.
- The *recipe* specifies what versions of the software (OS, application, middleware) should be built into that version of the appliance.
- It's this *recipe* that you're modifying when you use *Edit* under the *Contents* box in rBuilder.

For this guide, use the following steps to download FlatPress 0.804 Vivace to your local system, and to use rBuilder to use the FlatPress blog software as the application around which your appliance is built:

1. Download FlatPress 0.804 Vivace to your local system using the following URL:
<http://www.rpath.com/samples/flatpress-0.804-2.noarch.rpm>
2. Click the **Edit** button () from the *Appliance contents* section of your appliance workspace.
3. After the package information loads in the *Appliance Content Editor* dialog, click the green “plus” () above the package list.
4. In the *Package Creator* area that appears on the right, click **Browse** and select the FlatPress file you downloaded (*flatpress-0.804-2.noarch.rpm*), and then click **Upload**.
5. When the upload process finishes, click **Create Package** to accept the package information that rBuilder read from the RPM package. Be sure to save yourself a step by leaving the box checked to “add package to the appliance once built.”
6. Watch the status messages in the package creator as they indicate all the actions going on in the background. Here's what's going on behind the scenes:

1 rBuilder creates a simulated install environment that is compatible with your appliance.

2 rBuilder installs the uploaded software package in that simulated environment.

3 rBuilder assembles a new package from the installed and configured software, in a format specifically for managing as part of your appliance.

7. When the package build finishes, and the *Selected packages* list includes *flatpress*, click **Save** to save your appliance changes and close the *Appliance Content Editor* dialog.

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8. In your *Workspace* view, click the **Build** action button in the *Appliance contents* section. rBuilder provides a time-save here here, too: even though you only indicated adding FlatPress, rBuilder automatically detects and builds in other FlatPress requirements (Apache, PHP).
9. If you are using rBuilder Online, use the following steps to update your running EC2 instance. [If you are using a local rBuilder behind a corporate firewall, the instance can't do this with rBuilder alone; contact rPath (<http://www.rpath.com/corp/contact-us>) to learn more about providing your appliance updates outside your firewall.]
 - 9.1. After the new build is complete, go back to the **rPath Management Console** again, select your running EC2 instance, and click **Manage**.
 - 9.2. Log in to the rPath Platform Agent interface as *admin* (with your new password).
 - 9.3. Click **Updates** on the left, click **Check for Updates** to prompt the appliance to check the repository for new components, and click **OK** after the successful check.
 - 9.4. Click the button next to *System Update* to expand the display and see the list of new components that your appliance has downloaded. Verify that *flatpress* is listed among those other updates rBuilder pulled in automatically to support FlatPress. rBuilder saves you even more time here because you only have to download and install what's new.
 - 9.5. Click **Apply Now**, and then click **OK** to continue when the update process is finished.
 - 9.6. Click **Manage Services** on the left side, locate the newly-installed *Apache Web Server* in the list of services, and click the button under the *Start* column for that service.
 - 9.7. In the *rPath Management Console*, select your running EC2 instance again, and click **Connect**. Verify that the appliance shows the out-of-the-box FlatPress interface. Give a triumphant shout to celebrate your FlatPress appliance in the cloud... something like “Wahoo!” or “Yeehaw!” should do it.



Don't forget to shut down your EC2 instance when you finish your experiments!

The *Appliance Content Editor* dialog has a *Customize* appliance recipe tab and other features you can explore as you continue using rBuilder and using the references in [Section 9, How To Go Forward From Here](#).

9 How To Go Forward From Here

To complete your heroic transformation, go back and use the information in the previous sections as a guide for creating your own appliance. Naturally, every appliance will have its own quirks as you take it through rBuilder's steps. To help get you through this, visit <http://docs.rpath.com> and grab the following useful resources:

- **rBuilder NextStep Guide:** This is the perfect companion as you walk through these QuickStart steps with your own application software. The NextStep guide takes a second look at the process, with more details at each step, and FAQs throughout. *(available on or before April 23, 2009)*
- **QuickStart for the rPath Platform Development Image:** When it is time to “go geeky” and do your tweaks and customizations in a separate development environment, use this guide as an introduction to the pre-configured development image from rPath, available in both ready-to-launch virtual machine images as well as installable ISOs.
- **rAPA Customization Guide** and **rAPA Plugin Development Guide:** The rPath Platform Agent (rPA) was formerly called rAPA and these documents still bear that name. The customization guide introduces the built-in shortcuts to customizing the interface and functions of rPA, and the plugin guide introduces details of the rPA API to aid those looking to extend the rPA interface with custom tasks.

Besides these helpful resources, there is a community of heroes and how-to information available to you even before you have paid for support from rPath:

- rPath Wiki – wiki.rpath.com
- IRC channel *#conary* on FreeNode.net
- rPath Issue Tracking System -- issues.rpath.com