

RabbitMQ for PCF®

Version 1.6

User's Guide

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Table of Contents

Table of Contents	2
RabbitMQ® for Pivotal Cloud Foundry Documentation	3
Deploying the RabbitMQ® Service	6
RabbitMQ® for Pivotal Cloud Foundry	10
Upgrades	10
Release policy	10
Updating RabbitMQ for PCF from v1.6.x to v1.6.7	12
Configuring the RabbitMQ® Service	16
Default policies for the RabbitMQ® Service	21
RabbitMQ Policy	21
Clustering and Network Partitions	23
Managing the RabbitMQ® Service	25
RabbitMQ® for Pivotal Cloud Foundry	28
Operation Tips	28
Logging, Heartbeats, and Metrics	30
RabbitMQ® Entries in the VCAP_SERVICES Environment Variable	32
RabbitMQ® for PCF Release Notes	34
RabbitMQ® for Pivotal Cloud Foundry Documentation	41
Resource requirements	41

RabbitMQ® for Pivotal Cloud Foundry Documentation

Note: RabbitMQ for PCF v1.6 is no longer supported. The support period for v1.6 has expired. To stay up-to-date with the latest software and security updates, upgrade to RabbitMQ for PCF v1.10 or later.

RabbitMQ is a fast and dependable open-source message server that supports a wide range of use cases including reliable integration, content based routing and global data delivery, and high volume monitoring and data ingestion.

Emerging as the de facto standard for cloud messaging, RabbitMQ is used for efficient communication between servers, applications and devices, and creates lasting value by enabling rapid development of modern decentralized application and data architectures that can scale with your business needs. The [Pivotal Cloud Foundry](#) (PCF) installer enables cloud operators to deploy a [RabbitMQ service](#) in PCF. You can deploy the service as a single node or a cluster.

Product snapshot

Current RabbitMQ for PCF Details

Version: v1.6.25
Release Date: August 7 2017
Software component version: RabbitMQ OSS v3.6.10
Compatible Ops Manager Version(s): v1.7.x, v1.6.x
Compatible Elastic Runtime Version(s): v1.7.x, v1.6.x
vSphere support? Yes
AWS support? Yes
OpenStack support? Yes
IPsec support? No

Upgrading to the Latest Version

Consider the following compatibility information before upgrading RabbitMQ for Pivotal Cloud Foundry.

Note: Upgrading from any version of the tile to v1.6.18+ will incur downtime as the RabbitMQ cluster is taken offline while the version of RabbitMQ is upgraded to v3.6.10.

Note: Upgrading from any v1.5.x tile to v1.6.x will involve taking the RabbitMQ cluster offline while the version of RabbitMQ is upgraded from v3.5.7 to v3.6.5.

Note: Customers will only be able to upgrade to v1.7.7 or later of the tile.

Note: You can not upgrade version v1.5.11 to v1.6.0, so you must use v1.6.1 or later.

Note: You can not upgrade version v1.5.21 to v1.6.13, so you must use v1.6.14 or later.

Note: All customers upgrading from v1.6.x to v1.6.5 or later versions of the tile should read the *Additional upgrade steps for customers going from v1.6.x to v1.6.5* document located with the release on <https://network.pivotal.io/products/pivotal-rabbitmq-service>.

For more information, refer to the full [Product Compatibility Matrix](#).

Ops Manager Version	Supported Upgrades from Imported RabbitMQ Installation
v1.6.x and v1.5.x	<ul style="list-style-type: none"> From v1.5.0 through to v1.5.27, v1.6.0 through to v1.6.x
v1.7.x	<ul style="list-style-type: none"> From v1.5.9 through to v1.5.27, v1.6.0 through to v1.6.x

Features

- Provision an instance of the RabbitMQ service, which corresponds to a unique RabbitMQ Vhost (virtual host)
- Bind applications to an instance of the plan, providing unique credentials for each binding
- Management dashboard access to PCF Operators and application developers
- Deployment across multiple availability zones, with nodes striped across the AZs automatically
- Enable SSL (Secure Sockets Layer) for the AMQP, MQTT, STOMP protocols
- 2 node RabbitMQ cluster in a default deployment
- HAProxy load balancer across all nodes to balance connections
- Plugin configuration can be easily changed at any time and the cluster redeployed and updated
- The cluster topology can be changed and easily scaled out
- A default configurable queue policy is supplied in Ops Manager, but needs to be enabled on the deployment to take effect.
- Automated upgrades of RabbitMQ for major, minor and patch releases
- Configure the end point for the RabbitMQ Syslog
- RabbitMQ and HAProxy metrics are exposed on the firehose

Install via Pivotal Ops Manager

To install RabbitMQ for PCF, follow the procedure for installing Pivotal Ops Manager tiles:

1. Download the product file from [Pivotal Network](#).
2. Upload the product file to your Ops Manager installation.
3. Click **Add** next to the uploaded product description in the Ops Manager **Available Products** view to add this product to your staging area.
4. Click the newly added tile to review any configurable options.
5. Click **Apply Changes** to install the service.

This product requires Ops Manager v1.5.0 or greater.

Using RabbitMQ in your application

RabbitMQ is shown in the services marketplace, either in the Apps Manager or through `cf marketplace` on the CLI.

Application developers can create an instance of the application with `cf create-service p-rabbitmq standard <your name>`. For this service an instance equals a **Vhost** on the RabbitMQ cluster.

Creating a binding gives the user permissions to access this Vhost and associated management dashboard.

Current Limitations

Limitations with the current RabbitMQ for PCF product include:

- Availability Zone configuration **cannot** be changed once deployed.

We hope to address all of these limitations in future releases.

Known Issues

- In versions `1.4.1` and `1.4.2`, the `manage` button for your RabbitMQ instance in Apps Manager will not automatically log you into the RabbitMQ Dashboard. You need to press `logout` and then login with your `username` and `password` which can be obtained from inspecting the environment variables for your instance.

- In versions `1.5.0` and `1.5.1`, when performing a fresh installation or upgrade, if the Elastic Runtime system and application domains are different, then the `Broker Registrar` errand will fail. To resolve this, disable the errand and redeploy, then register the broker manually using the system domain route `pivotal-rabbitmq-broker.system.domain`. For more information about registering brokers see the [CloudFoundry documentation](#).
- In versions `1.5.0`, `1.5.1`, `1.5.2`, `1.5.3`, when performing a fresh installation or upgrade, if you have the `rabbitmq_jsonrpc_channel` or `rabbitmq_jsonrpc_channel_examples` plugins selected then the RabbitMQ nodes will fail to start. The plugins are no longer distributed with RabbitMQ and plugin validation was introduced in RabbitMQ `3.5.7`, causing the nodes to fail to start. To resolve this issue you should install or upgrade to version `1.5.4` or above of the tile.
- In the `1.5.x` and `1.6.x` tiles, it is not possible to install the RabbitMQ tile in multiAZ with multi-subnet networks.
- IPsec will not work with any version of the RabbitMQ tile, and customers wishing to use it are advised to deploy their services to a different subnet.

Please provide any bugs, feature requests, or questions to [the Pivotal Cloud Foundry Feedback list](#).

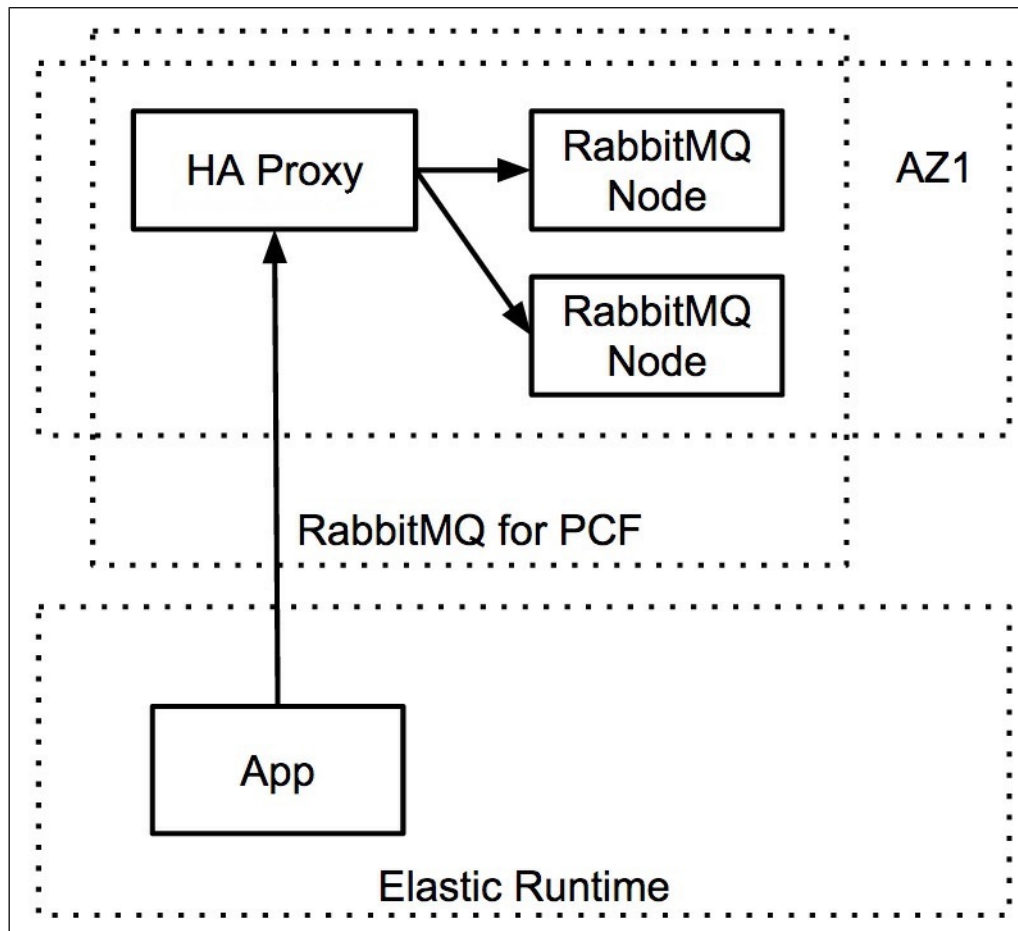
Deploying the RabbitMQ® Service

Default Deployment

Deploying RabbitMQ for [Pivotal Cloud Foundry](#) (PCF) through Ops Manager will deploy a RabbitMQ cluster of 2 nodes by default.

The deployment includes a single load balancer `haproxy` which spreads connections on all of the default ports, for all of the shipped plugins across all of the machines within the cluster.

The deployment will occur in a single availability zone (AZ).



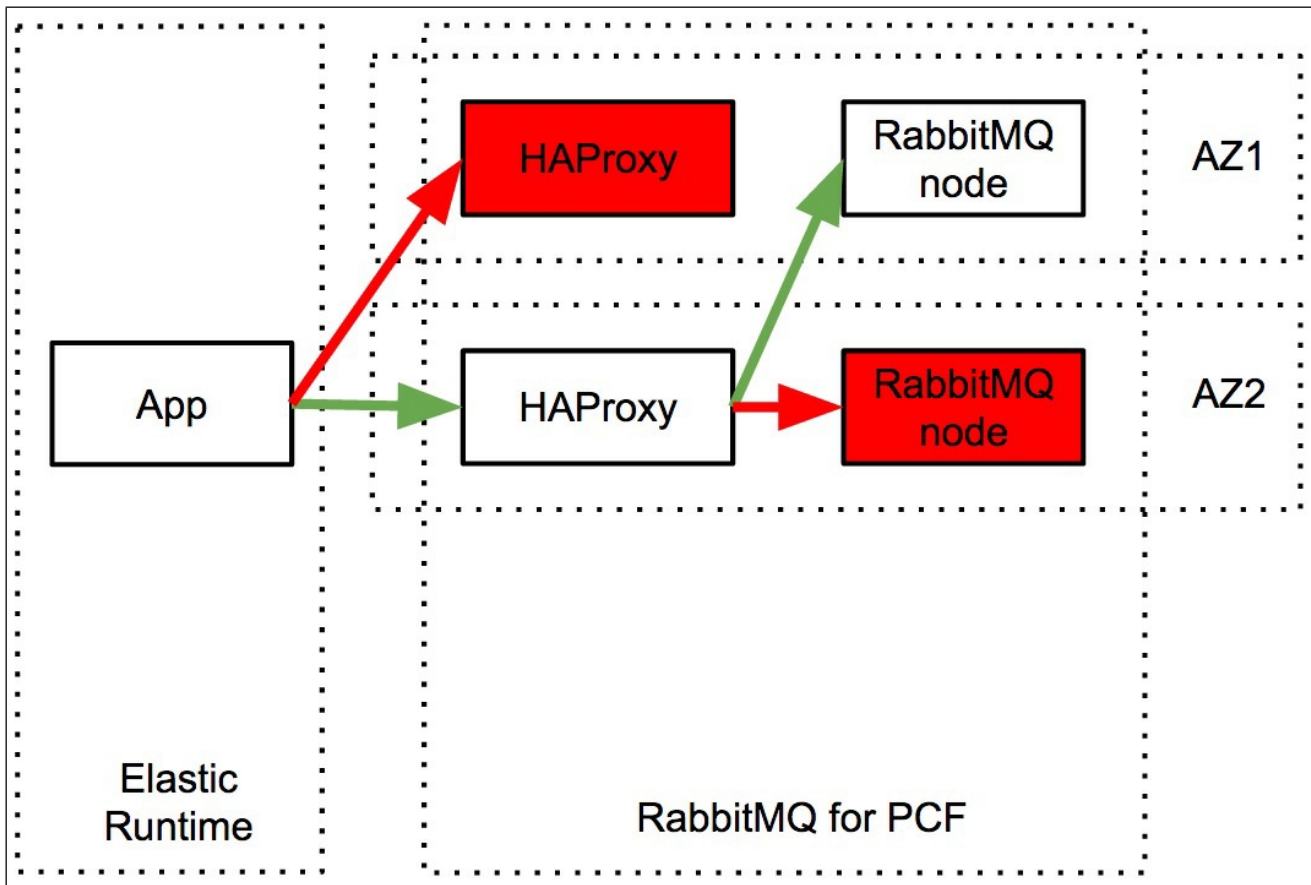
Considerations for this deployment

- Provides HA for RabbitMQ nodes to avoid data loss
- HAProxy is a single point of failure (SPOF)
- The entire deployment is in a single AZ, which does not protect against external failures from failures in hardware, networking, etc.

Recommended Deployment

We recommend that RabbitMQ is deployed across at least two availability zones.

The HAProxy job instance count should also be increased to match the number of AZs to ensure there is a HAProxy located in each AZ. This removes the HAProxy SPOF and provides further redundancy.



In the above diagram, you can see that you can now suffer the failure of a single HAProxy and single RabbitMQ node and still keep your cluster online and applications connected.

Upgrading to this deployment from a single AZ deployment

It is **not** possible to upgrade to this setup from the default deployment across a single AZ.

This is because the AZ setup cannot be changed once the tile has being deployed for the first time, this is to protect against data loss when moving jobs between AZs.

Upgrading to this deployment from a multi AZ deployment

If you have deployed the tile across two AZs, but with a single HAProxy instance you can migrate to this setup as follows:

1. Deploy an additional HAProxy instance through Ops Manager
2. New or re-bound applications to the RabbitMQ service will see the IPs of both HAProxys immediately
3. Existing bound applications will continue to work, but only using the previously deployed HAProxy IP Address. They can be re-bound as required at your discretion.

Considerations for this deployment

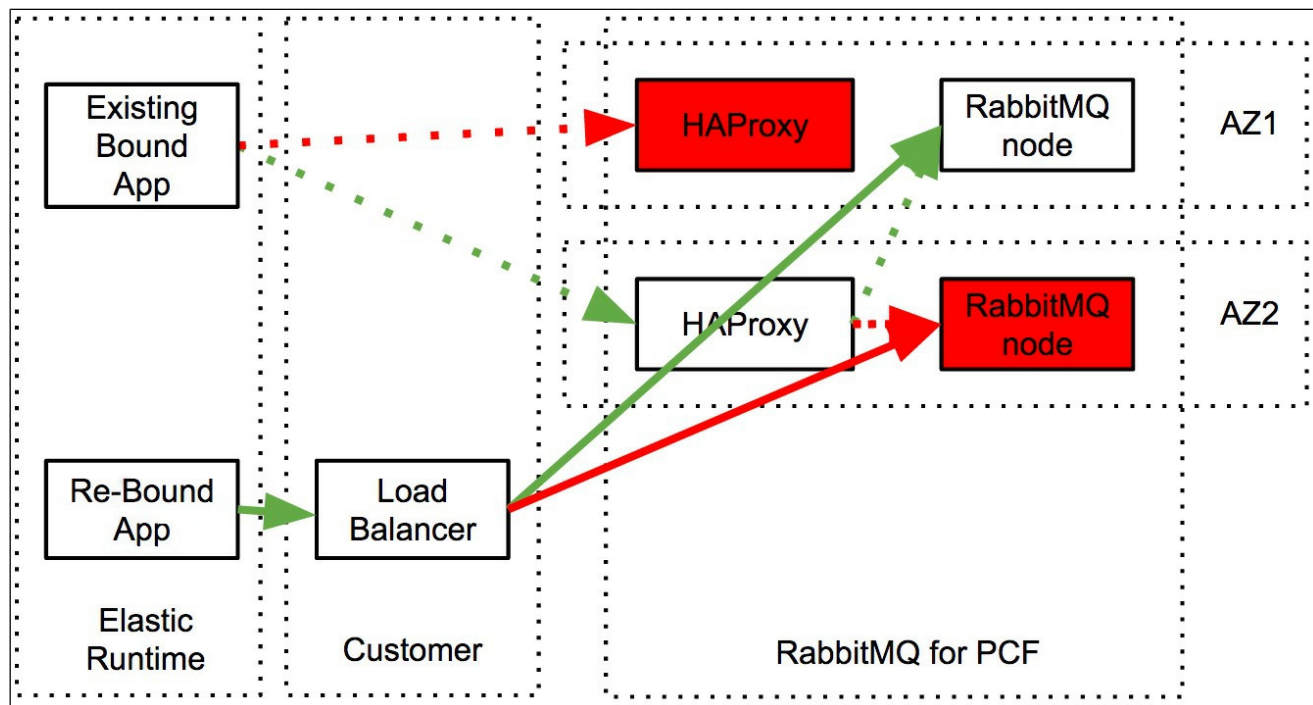
- Requires IaaS configuration for availability zones ahead of deploying the RabbitMQ tile
- Application developers will be handed the IPs of each deployed HAProxy in their environment variables

Advanced Deployment

This deployment builds upon the above recommended deployment, so follows the same upgrade paths.

This allows you to replace the use of HAProxy with your own external load balancer.

You may choose to do this to remove any knowledge of the topology of the RabbitMQ setup from application developers.



Advantages

- Application developers do not need to handle multiple IPs for the HAProxy jobs in their applications

Disadvantages

- The load balancer needs to be configured with the IPs of the RabbitMQ Nodes. These will only be known once the deployment has finished. The IPs should remain the same during subsequent deployments but there is a risk they can change.

Upgrading to this deployment from the recommended deployment

It is possible to first deploy with multiple HAProxy jobs, as per the recommended deployment and decided to later use your own external load balancer.

This can be achieved without downtime to your applications.

This can be achieved as follows:

1. Configure your external load balancer to point to the RabbitMQ Node IPs
2. Configure the DNS name or IP address for the external load balancer (ELB) on the RabbitMQ tile in Ops Manager
3. Deploy the changes
4. Any new instances of the RabbitMQ service or any re-bound connections will use the DNS name or IP address of the ELB in their `VCAP_SERVICES`
5. Any existing instances will continue to use the HAProxy IP addresses in their `VCAP_SERVICES`
6. Phase the re-binding of existing applications to have their environment variables updated
7. Once all applications are updated
8. Reduce the instance count of the `HAProxy` job in Ops Manager to 0
9. Deploy the changes

This approach works as any existing bound applications have their `VCAP_SERVICES` information cached in the cloud controller and are only updated by a

re-bind request.

Downgrading from this deployment to the recommended deployment

If you are currently using an external load balancer, then you can move back to using HAProxy instead.

You can achieve this by following the above steps in reverse order and re-instating the HAProxy jobs.

RabbitMQ® for Pivotal Cloud Foundry

Upgrades


This product enables automated upgrades between versions of the product and is deployed through Ops Manager, and due to RabbitMQ product limitations may require the cluster to be taken offline. When this is necessary it is clearly noted in the release notes for that version.

Note there is a difference between the cluster remaining available during a tile upgrade/update, and an individual queue placed on nodes in a cluster.

A reference guide for deployments is shown the table below. Please be aware that this is a guide only and that the release notes for the version you are updating to must be checked before upgrading.

Operations Manager Action	Will Downtime Be Required For This Upgrade / Update
Major Tile Version Upgrade	<ul style="list-style-type: none"> The RabbitMQ cluster will be taken offline for the duration of the upgrade
Minor Tile Version Upgrade	<ul style="list-style-type: none"> The RabbitMQ cluster will be taken offline for the duration of the upgrade
Patch Tile Version Upgrades	<ul style="list-style-type: none"> Normally these are rolling deployments with each node being updated in turn. In these cases the cluster will remain available but individual queues may be taken offline, as each node is restarted. There are specific migration paths which will require downtime which will be identified in the release notes for that version.
Stemcell Only - Patch Tile Version Upgrades	<ul style="list-style-type: none"> Where the patch update is only a new stemcell version these are rolling deployments with each node being updated in turn. In these cases the cluster will remain available but individual queues may be taken offline, as each node is restarted.

The specific upgrade paths are detailed [here](#) for each released version.

 **Note:** For specific information about updating RabbitMQ for PCF from v1.6.0–v1.6.4, see [Updating RabbitMQ for PCF from versions v1.6.x to v1.6.6](#).

To upgrade the product:

- The Operator should download the latest version of the product from [Pivotal Network](#)
- Upload the new .pivotal file to Ops Manager
- Upload the stemcell associated with the update (*if required*)
- Update any new mandatory configuration parameters (*if required*)
- Press “Apply changes” and the rest of the process is automated

It is necessary to increase the number of HAProxy instances from the default of one to two, before an upgrade is initiated to enable a zero downtime upgrade. During a typical upgrade deployment, nodes are upgraded one at a time in the cluster providing a zero downtime deployment. Applications may experience a disconnected session, if the application attempts to reconnect it will be directed to another working node automatically.

Only when upgrading between specific versions of Erlang or RabbitMQ is an outage required on the cluster. This will be clearly stated on the release notes for that version, should this be required.

The length of the downtime depends on whether there is a stemcell update to replace the operating system image or whether the existing VM can simply have the RabbitMQ software updated. Stemcell updates incur additional downtime while the IaaS creates the new VM while updates without a stemcell update are faster.

Ops Manager ensures the instances are updated with the new packages and any configuration changes are applied automatically.

Upgrading to a newer version of the product does not cause any loss of data or configuration. This is explicitly tested for during our build and test process for a new release of the product. (In future releases of the product the default number of HAProxy instances will be increased to two).

Please note that it may take busy RabbitMQ nodes a long time to shutdown during the upgrade and this process should not be forcibly stopped. Where possible it is advised to fully drain queues before an upgrade involving an update to the version of RabbitMQ running.

Release policy

When a new version of RabbitMQ is released we aim to release a new version of the product containing this soon after.

Where there is a new version of RabbitMQ or another dependent software component such as the stemcell released due to a critical CVE, Pivotal’s goal is to release a new version of the product within 48 hours.

Updating RabbitMQ for PCF from v1.6.x to v1.6.7

Page last updated:

This topic describes how to update the RabbitMQ® tile to v1.6.7 from earlier v1.6.0–v1.6.4 versions. Customers upgrading from versions higher than 1.6.5 may ignore this section.

Follow this procedure before upgrading Pivotal Cloud Foundry (PCF) v1.7 to v1.8. For general information about upgrading PCF, see the [Upgrading Pivotal Cloud Foundry](#) [↗](#) topic.

⚠ WARNING: Do not upgrade to RabbitMQ v1.7.x until you have upgraded PCF to v1.8 or later.

The update described on this page includes a workaround for an issue with earlier versions of the RabbitMQ tile: the service-metrics process on each RabbitMQ server node must be stopped before the update.

Prepare for the Update

Before upgrading the RabbitMQ tile, do the following:

- [Update your stemcells to 3232.17](#)
- [Check tile status](#)
- [Check cluster status](#)

Update Your Stemcells

The Rabbit MQ v1.6.7 tile requires stemcell 3232.21. Later versions of the tile require higher stemcells, so make sure to look at the release notes for details.

When you update a stemcell for one tile, all the tiles that use floating stemcells and that are using earlier stemcells will have their stemcells updated. For general information about floating stemcells, see the [Understanding Floating Stemcells](#) [↗](#) topic.

Before you update the RabbitMQ tile, Pivotal recommends that you update the stemcell on all products that use floating stemcells. Do this by updating the stemcell for Pivotal Elastic Runtime as follows:

1. Download the stemcell 3232.21 for your IaaS from the [Pivotal Network](#) [↗](#).
2. On the **Installation Dashboard**, click **Pivotal Elastic Runtime**.
3. On the **Settings** tab, click **Stemcell**.
4. Click **Import Stemcell**.
5. Upload the 3232.21 stemcell file.
6. Return to the Installation Dashboard and click **Apply Changes**.

Check the Tile Status

Ensure that all the VMs have sufficient persistent disk space, that is, they are less than 75% full, and are in a good state:

1. Navigate to the Status page on the RabbitMQ tile.

PCF Ops Manager admin

Installation Dashboard

RabbitMQ

Settings Status Credentials Logs

Jobs on Availability Zone "eu-west-1a"

JOB	INDEX	IPS	CID	LOAD AVG15	CPU	MEMORY	SWAP	SYSTEM DISK	EPHEM. DISK	PERS. DISK	LOGS
RabbitMQ node	0	10.0.16.49	i-0a7a2e510870b00f0	0.23	8.7%	2%	0%	44%	4%	0%	📄
	1	10.0.16.50	i-010e44726f3c2192d	0.24	4.8%	2%	0%	44%	4%	0%	📄
	2	10.0.16.51	i-01b8347f30727b0e5	0.20	8.4%	2%	0%	44%	4%	0%	📄
	3	10.0.16.52	i-03e1ea9e799e4d9ed	0.22	8.5%	2%	0%	44%	4%	0%	📄
	4	10.0.16.53	i-0fd3dd31e95cbc082	0.22	8.6%	2%	0%	44%	4%	0%	📄
HAProxy for RabbitMQ	0	10.0.16.54	i-0e27857ae7860a3dc	0.05	0.1%	3%	0%	43%	18%	N/A	📄
	1	10.0.16.55	i-0900812091f14db0b	0.05	0.0%	3%	0%	43%	18%	N/A	📄
RabbitMQ service broker	0	10.0.16.56	i-01e8683b4fea1413c	0.05	0.1%	7%	0%	44%	31%	N/A	📄

2. Check that all of the entries in the "pers. disk" column are below 75%.
3. If the persistent disk ("pers. disk") is greater than 75%, then consume messages from the queues hosted on the node or contact [Support](#) for assistance.
4. Confirm that all RabbitMQ nodes in the cluster are operational. If any nodes are in a "failing" state, they are outlined in red.


PCF Ops Manager admin

Installation Dashboard

RabbitMQ

Settings Status Credentials Logs

Jobs on Availability Zone "eu-west-1a"

JOB	INDEX	IPS	CID	LOAD AVG15	CPU	MEMORY	SWAP	SYSTEM DISK	EPHEM. DISK	PERS. DISK	LOGS
 RabbitMQ node	0	10.0.16.20	i-feab9c72	0.09	0.2%	2%	0%	43%	4%	0%	📄
	1	10.0.16.21	i-baab9c36	0.07	4.6%	2%	0%	43%	4%	0%	📄
	2	10.0.16.59	i-2495a2a8	0.10	0.3%	2%	0%	43%	4%	0%	📄
	3	10.0.16.60	i-2595a2a9	0.13	0.1%	2%	0%	43%	4%	0%	📄
	4	10.0.16.61	i-2194a3ad	0.14	0.2%	2%	0%	43%	4%	0%	📄
HAProxy for RabbitMQ	0	10.0.16.49	i-bdab9c31	0.05	0.1%	2%	0%	43%	17%	N/A	📄
RabbitMQ service broker	0	10.0.16.50	i-feac9b72	0.05	0.1%	6%	0%	43%	31%	N/A	📄

5. If Ops Manager indicates any nodes are in a failing state, contact [Support](#). Do not update the RabbitMQ tile until all nodes in the cluster are operational.

Check the Cluster Status

Ensure that all RabbitMQ nodes are correctly clustered and can see each other:

1. Navigate to the RabbitMQ management interface at `http://pivotal-rabbitmq.SYSTEM_DOMAIN`
2. Log in with the full admin username and password created when you first deployed the RabbitMQ tile.
3. On the **Nodes** section, ensure that there are no red banners that say `Node not running`.

Global counts (?)

Connections: 225 Channels: 225 Exchanges: 15 Queues: 1 Consumers: 50

▼ Nodes

Name	File descriptors (?)	Socket descriptors (?)	Erlang processes	Memory	Disk space	Rates mode	Info
rabbit@1155395438c0aa115f3a5b3729c1cad7	56 300000 available	0 269908 available	202 1048576 available	80MB 6.0GB high watermark	9.2GB 48MB low watermark	none	Disc 2
rabbit@7f9ed9ce49dc80448c7ea0072e4e39ff	120 300000 available	62 269908 available	889 1048576 available	1.9GB 6.0GB high watermark	5.8GB 48MB low watermark	none	Disc 2
rabbit@8064a937d800ed68b6287e8932138c8f	296 300000 available	163 269908 available	2028 1048576 available	3.7GB 6.0GB high watermark	5.8GB 48MB low watermark	none	Disc 2 Stats
rabbit@b5e88c440fb30ad0e66f6934ed3f0d46	56 300000 available	0 269908 available	202 1048576 available	80MB 6.0GB high watermark	9.2GB 48MB low watermark	none	Disc 2
rabbit@e0a9780b2274ee0c0379f430f62f9af2	Node not running						

In this example, the fifth node in the cluster cannot be reached from the other nodes.

- If you see a problem with the nodes, contact [Support](#). Do not update the RabbitMQ tile until all nodes are green.

Update the RabbitMQ Tile

Updating the RabbitMQ tile to v1.6.7 is different from a normal update. Because of an issue in earlier versions of RabbitMQ, you must stop the service-metrics process on each RabbitMQ server node before performing the update. These service-metrics processes are automatically restarted after the upgrade.

There are two parts for updating the RabbitMQ tile:

- [Stop the service-metrics process](#)
- [Import the product update](#)

Stop the Service-Metrics Processes

Stop the service-metrics on each RabbitMQ server node by SSHing into the node and using monit to stop the processes:

- Target your RabbitMQ deployment with BOSH, on the command line, run `bosh ssh`. For more information, see the [Advanced Troubleshooting with the BOSH CLI](#) topic.

```
RSA 1024 bit CA certificates are loaded due to old openssl compatibility
1. rabbitmq-haproxy/0 (eaf83d0a-a939-4e17-bac3-c9f0de428158)
2. rabbitmq-broker/0 (fe07bfd1-d2b0-4639-b808-8d6341e67fb1)
3. rabbitmq-server/0 (80910e31-1427-446e-93d7-29bb215d0aa4)
4. rabbitmq-server/1 (f1819cda-c629-411b-b68c-e4a15535c0e0)
Choose an instance:
```

- SSH into each `rabbitmq-server` node in turn and perform the following steps. Ignore the `rabbitmq-haproxy` and `rabbitmq-broker` nodes.
 - Choose a rabbitmq-server instance.
 - Open a root shell by typing `sudo -i`
 - Stop service-metrics by typing `monit stop service-metrics`
 - Ensure service-metrics has stopped by running monit summary and checking the status of service-metrics is `not monitored`. It may take a few moments for service-metrics to shut down, so you might have to run monit summary several times.
 - Ensure metrics do not leave processes running. Type `ps aux | grep rabbitmqctl` and ensure that no running processes are returned.









When the service-metrics stop on a given rabbitmq-server node, Ops Manager detects that something is wrong with that node. As a result, after you stop all your service-metrics processes, the status tab in your RabbitMQ tile shows problems like this:

Installation Dashboard

RabbitMQ

Settings Status Credentials Logs

Jobs on Availability Zone "eu-west-1a"

JOB	INDEX	IPS	CID	LOAD AVG15	CPU	MEMORY	SWAP	SYSTEM DISK	EPHEM. DISK	PERS. DISK	LOGS
 RabbitMQ node	0	10.0.16.20	i-feab9c72	0.07	0.3%	2%	0%	43%	4%	0%	
	1	10.0.16.21	i-baab9c36	0.05	0.1%	2%	0%	43%	4%	0%	
	2	10.0.16.59	i-2495a2a8	0.05	0.2%	2%	0%	43%	4%	0%	
	3	10.0.16.60	i-2595a2a9	0.05	0.1%	2%	0%	43%	4%	0%	
	4	10.0.16.61	i-2194a3ad	0.06	0.2%	2%	0%	43%	4%	0%	
HAProxy for RabbitMQ	0	10.0.16.49	i-bdab9c31	0.05	0.0%	2%	0%	43%	17%	N/A	
RabbitMQ service broker	0	10.0.16.50	i-feac9b72	0.05	0.2%	7%	0%	43%	31%	N/A	

If you checked the tile status immediately before stopping the service-metrics, you can be confident that the errors are only related to the stoppage. If you check the [cluster status](#) now, it should still be in a good state.

Import the Product Update

This is the standard [upgrade procedure for service tiles](#).

1. Click **Import a Product**.
2. Under **Available Products**, click **Upgrade** for the v1.6.7 RabbitMQ tile.
3. Click **Apply changes**.
4. As a part of the upgrade, the service-metrics processes are restarted on each RabbitMQ server node.
5. After the update, check that the [tile status](#) and [cluster status](#) are good.

If you are performing this update as part of upgrading PCF to v1.8, return to [Review Product Compatibility Prerequisites](#) in the upgrading topic.

Configuring the RabbitMQ® Service

To configure RabbitMQ for [Pivotal Cloud Foundry](#) (PCF), navigate to the tile in the Ops Manager Installation Dashboard and click the **Settings** tab.

You can configure the following items:

Management Dashboard


You must choose an admin username and password for RabbitMQ.

This will grant you full admin access to RabbitMQ via the Management UI.

RabbitMQ cluster configuration.

RabbitMQ admin user credentials *

admin

 **Note:** To rotate your administrator credentials, enter a new username and password, save your options, and redeploy by returning to the Ops Manager Installation Dashboard and clicking **Apply Changes**.

Plugins

You can choose which plugins you wish to enable.

You must leave the management plugin enabled otherwise nothing will work.

RabbitMQ plugins *

☐ rabbitmq_amqp1_0

☐ rabbitmq_auth_backend_ldap

☐ rabbitmq_auth_mechanism_ssl

☐ rabbitmq_consistent_hash_exchange

☐ rabbitmq_federation

☐ rabbitmq_federation_management

☒ rabbitmq_management

☐ rabbitmq_management_visualiser

☐ rabbitmq_mqtt

☐ rabbitmq_shovel

☐ rabbitmq_shovel_management

☐ rabbitmq_stomp

☐ rabbitmq_tracing

☐ rabbitmq_web_stomp

☐ rabbitmq_web_stomp_examples

☐ rabbitmq_event_exchange

[Click here for more information about RabbitMQ plugins](#)

HAProxy Ports

You can choose which ports HAProxy should load balance to the RabbitMQ nodes.

RabbitMQ cluster HAProxy ports *

15672, 5672, 5671, 1883, 8883, 61613, 61614

By default all the default ports of all the available plugins will be load-balanced.

However, if you install extra protocol plugins, or provide a custom configuration which changes the ports that RabbitMQ listens on then you must update the list of load-balanced ports.

Note that you must always leave the management plugin listening on port 15672 and load balance that port.

If you change the topology of your RabbitMQ cluster, the HAProxy is automatically reconfigured during the deployment.

Port to protocol mappings

- 15672 = Management dashboard
- 5672 = RabbitMQ
- 5671 = RabbitMQ SSL
- 1883 = MQTT
- 8883 = MQTT SSL
- 61613 = STOMP
- 61614 = STOMP SSL
- 15674 = Web STOMP
- 4567 = RabbitMQ Service Broker
- 3457 - 3459 = CF Loggregator

Security Groups

To enable access to the RabbitMQ tile service, you will need to ensure your security group allows access to the HAProxy and RabbitMQ Service Broker VMs configured in your deployment. The IP addresses for these can be obtained from Ops Manager “Status” page for the RabbitMQ tile. You should ensure the following ports are enabled for those VMs: 15672, 5672, 5671, 1883, 8883, 61613, 61614, 15674, 4567, 3457 - 3459.

Here is a template for configuring your Cloud Foundry security groups:

```
[ {"protocol": "tcp", "destination": "<haproxy-node-IP-addresses>", "ports": "5671,5672,1883,8883,61613,61614,15672,15674"}, {"protocol": "tcp", "destination": "<service-broker-node-IP-addresses>", "ports": "4567"} ]
```

Application Security Groups

To allow this service to have network access you must create [Application Security Groups](#) (ASGs).



Note: Without Application Security Groups the service will not be usable.

Application Container Network Connections

Application containers that use instances of the RabbitMQ service require the following outbound network connections:

Destination	Ports	Protocol	Reason
HAProxy IPs	5672	tcp	Application containers using AMQP
HAProxy IPs	5671	tcp	Application containers using AMQP over SSL
HAProxy IPs	1883	tcp	Application containers using MQTT
HAProxy IPs	8883	tcp	Application containers using MQTT over SSL
HAProxy IPs	61613	tcp	Application containers using STOMP
HAProxy IPs	61614	tcp	Application containers using STOMP over SSL

Destination	Ports	Protocol	Replicas
			1

Create an ASG called `rabbitmq-app-containers` with the above configuration and bind it to the appropriate space, or to provide access to all started apps, bind it to the `default-running` ASG set and restart your apps. Please note if you are using an external load balancer or have more than one IP address for HAProxy, you must also create egress rules for these. Example:

```
[
  {
    "ports": "5671-5672",
    "protocol": "tcp",
    "destination": "10.10.10.10/32"
  }
]
```

SSL

You can provide SSL certificates and keys for use by the RabbitMQ cluster.

RabbitMQ server private key

RabbitMQ server certificate

RabbitMQ server CA certificate

Note SSL is simultaneously provided on the AMQPS port (5671) and the management port (15672).

If you provide SSL keys and certificates, you are disabling non-SSL support.

No other plugins are automatically configured for use with SSL.

Note SSL settings are applied equally across all machines in the cluster.

[Click here for more information about SSL support](#)

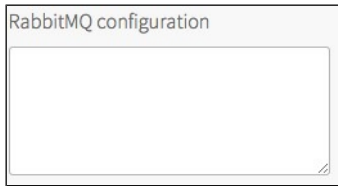
Erlang Cookie

You can provide an Erlang cookie to be used by the cluster if you wish. This can be useful if you want to connect directly to the RabbitMQ cluster such as with `rabbitmqctl` or to connect other machines running Erlang.

Erlang cookie used by RabbitMQ nodes and rabbitmqctl

RabbitMQ Config

You can provide a full `rabbitmq.config` file, if you wish.



This file is then provided to all the nodes in the cluster.

[Click here for more information about the RabbitMQ configuration file](#)

TLS Support

TLS v1.0 is disabled by default, due to insecurities.



You can enable it again by ticking the checkbox.

TLS v1.1 and 1.2 are enabled by default and cannot be turned on or off.

External load balancer



You can configure a DNS name or IP address of an external load balancer to be returned in the binding credentials (`VCAP_SERVICES`) to application developers.

Assigned IPs

It is not supported to change the IP addresses which have been assigned to the RabbitMQ deployments. Doing so will cause the deployment to fail. For example it is not supported to change the subnet into which the RabbitMQ cluster was originally provisioned.

RabbitMQ Server settings that cannot be overwritten

- `rabbit halt_on_upgrade_failure false`
- `rabbitmq_mqtt subscription_ttl 1800000`
- `rabbit disk_free_limit 50MB`
- `log_levels [{connection,info}]`
- `halt_on_upgrade_failure false`
- `{rabbit, [{collect_statistics_interval, 60000}] }`
- `{rabbitmq_management, [{rates_mode, none}] }`

When SSL is enabled:

- `rabbit tcp_listeners []`
- `rabbit ssl_listeners [5671]`
- `rabbitmq_management listener [{port,15672},{ssl,false}]`
- `rabbitmq_mqtt ssl_listeners [8883]`
- `rabbitmq_stomp ssl_listeners [61614]`

Default policies for the RabbitMQ® Service

RabbitMQ Policy

An example policy is configured in Ops Manager but not enabled.

You should configure the policy to suit your own deployment. The example in the “Policy for new instances” textarea is given as guidance of how to format the configuration.

The following rules apply:

- The policy is only applied to new instances
- Any existing instances will not have the policy applied
- The policy can be updated in Ops Manager and this will only be applied to any new instances created there after
- The policy can only be deleted manually from the RabbitMQ nodes

Viewing or changing the policy

In Ops Manager on the RabbitMQ tile, there is a left hand menu item called `RabbitMQ Policy`

RabbitMQ Policy definition applied to new instances

☒ Enable custom policy on new instances

Policy for new instances *


```
{
  "ha-mode": "exactly",
  "ha-params": 2,
  "ha-sync-mode": "automatic"
}
```

The policy must be valid JSON and it should use valid RabbitMQ policy criteria. This is not validated during the deployment, so any errors could either cause the deployment to fail or policies to not be applied correctly.

For more information, view [RabbitMQ Policies](#).

RabbitMQ dashboard

You can view the policy on the RabbitMQ Dashboard. The URL can be obtained from your `VCAP_SERVICES` for application developers.

The policy is applied to all queues, with a rank of 50 so it can be overridden by defining your own policy with a higher rank.

Policies				
▼ All policies				
Filter:	<input type="text"/>	<input type="checkbox"/> Regex (?)		
Name	Pattern	Apply to	Definition	Priority
operator_set_policy	.*	all	ha-mode: exactly ha-params: 2 ha-sync-mode: automatic	50

You can see any new queues created have the policy automatically applied.

Queues									
▼ All queues									
Filter:		<input type="text"/> <input type="checkbox"/> Regex (?)							
Overview			Messages			Message rates			+/-
Name	Features	State	Ready	Unacked	Total	incoming	deliver / get	ack	
test	D operator_set_policy	running	0	0	0				

Network partition behavior

It is possible to change how you would want RabbitMQ to act once it discovers there has been a network partition. The two options are `pause_minority` and `autoheal`, and more detail on these settings can be found here: <https://www.rabbitmq.com/partitions.html>

You must set the choose the option you want before deploying, or the default `pause_minority` will be used.

Clustering and Network Partitions

The RabbitMQ® tile uses the `pause_minority` option for handling cluster partitions by default. This ensures data integrity by pausing the partition of the cluster in the minority, and resumes it with the data from the majority partition. You must maintain more than two nodes. If there is a partition when you only have two nodes, both nodes immediately pause.

You can also choose the `autoheal` option in the **RabbitMQ Policy** tab. In this mode, if a partition occurs, RabbitMQ automatically decides on a winning partition, and restarts all nodes that are not in the winning partition. This option allows you to continue to receive connections to both parts of partitions.

Detecting a Network Partition

When a network partition occurs, a log message is written to the RabbitMQ node log:

```
=ERROR REPORT===== 15-Oct-2012::18:02:30 =====
Mnesia(rabbit@da3be74c053640fe92c6a39e2d7a5e46): ** ERROR ** mnesia_event got
{inconsistent_database, running_partitioned_network, rabbit@21b6557b73f343201277dbf290ae8b79}
```

You can also run the `rabbitmqctl cluster_status` command on any of the RabbitMQ nodes to see the network partition. To run `rabbitmqctl cluster_status`, do the following:

1. `$ sudo su -`
2. `$ cd /var/vcap/packages`
3. `$ export ERL_DIR=$PWD/erlang/bin/`
4. `$ cd rabbitmq-server/bin/`
5. `$./rabbitmqctl cluster_status`

```
[...
{partitions,
 [[rabbit@da3be74c053640fe92c6a39e2d7a5e46,
 [rabbit@21b6557b73f343201277dbf290ae8b79]]}]
```

Recovering

Because the RabbitMQ tile uses the `pause_minority` option, minority nodes recover automatically after the partition is resolved. After a node recovers, it resumes accessing the queue along with data from the queues on the other nodes. However, if your queues use `ha-mode: all`, they only synchronize fully after consuming all the messages created while the node was down. This is similar to how messages synchronize when you create a new queue.

Manually Synchronizing after a Partition

After a network partition, a queue on a minority node synchronizes after consuming all the messages created while it was down. You can also run the `sync_queue` command to synchronize a queue manually. To run `sync_queue`, do the following on each node:

1. `$ sudo su -`
2. `$ cd /var/vcap/packages`
3. `$ export ERL_DIR=$PWD/erlang/bin/`
4. `$ cd rabbitmq-server/bin/`
5. `$./rabbitmqctl list_queues`
6. `$./rabbitmqctl sync_queue name`

Managing the RabbitMQ® Service

RabbitMQ Management Dashboard

Admin User

To gain access to the management dashboard as the `admin` user, visit <http://pivotal-rabbitmq.your.cf.installation.example.com>

The username and password is the username and password you provided in the RabbitMQ configuration in Ops Manager, which is also shown in the Credentials tab.

RabbitMQ

Overview | Connections | Channels | Exchanges | Queues | Admin

Overview

▼ Totals

Queued messages (chart: last minute) (?)

Message rates (chart: last minute) (?)

Currently idle

Global counts (?)

Connections: 0 | Channels: 0 | Exchanges: 15 | Queues: 0 | Consumers: 0

▼ Nodes

Name	File descriptors (?)	Socket descriptors (?)	Erlang processes	Memory	Disk space	Info
rabbit@6031f2ce968ce856e9f684c504f6aecd	20 1024 available	1 829 available	177 1048576 available	40MB 3.1GB high watermark	7.3GB 977kB low watermark	Disc 2 Stats
rabbit@623a32cce88bc994de244cec4e6c6085	20 1024 available	1 829 available	175 1048576 available	39MB 3.1GB high watermark	7.3GB 977kB low watermark	Disc 2

▼ Ports and contexts

Listening ports

Protocol	Node	Bound to	Port
amqp	6031f2ce968ce856e9f684c504f6aecd	::	5672
amqp	623a32cce88bc994de244cec4e6c6085	::	5672
clustering	6031f2ce968ce856e9f684c504f6aecd	::	25672
clustering	623a32cce88bc994de244cec4e6c6085	::	25672

Web contexts

Context	Node	Bound to	Port	SSL	Path
RabbitMQ Management	6031f2ce968ce856e9f684c504f6aecd	0.0.0.0	15672	o	/
RabbitMQ Management	623a32cce88bc994de244cec4e6c6085	0.0.0.0	15672	o	/

Application Developer

Users of Cloud Foundry who create instances via the Apps Manager or the cf CLI also get access to the Management UI. This is done using credentials that provide access only to their particular `vhost`.

The appropriate URL is accessible via the Manage button within the Apps Manager.

SERVICES Add Service		
SERVICE INSTANCE	SERVICE PLAN	BOUND APPS
rabbit Manage Documentation Support Delete	RabbitMQ for Pivotal CF Production	0

Or it is also injected into the `VCAP_SERVICES` environment variable provided to apps running on Cloud Foundry. This can also be found via the CLI using

```
cf env <your app name>
```

```
➔ ~ cf env lab-rat
Getting env variables for app lab-rat in org development / space development as me...
OK

System-Provided:
{
  "VCAP_SERVICES": {
    "p-rabbitmq": [
      {
        "credentials": {
          "dashboard_url": "http://pivotal-rabbitmq.crystal.pepsi.cf-app.com/#/login/fd87c5d4-ca55-41f3-ba8a-cf0b0711f052/243bvlaa8c5m5dka1701b207ff",

```

Logging

A TCP Syslog endpoint can be configured in Ops Manager. Logs are currently only forwarded for the RabbitMQ cluster.

RabbitMQ CLI

If you wish to run commands such as `rabbitmqctl` then you have two options:

SSH into one of the machines running the rabbitmq-server. IPs can be found from the Status tab and access credentials from the Credentials tab within the RabbitMQ component of the installer. From there you need to bring RabbitMQ and Erlang into your environment and from there you can use

```
rabbitmqctl :
```

```
bash-4.1# export PATH=$PATH:/var/vcap/packages/rabbitmq-server/bin
bash-4.1# export PATH=$PATH:/var/vcap/packages/erlang/bin
bash-4.1# rabbitmqctl cluster_status
Cluster status of node rabbit@node0 ...
[{nodes,[{disc,[rabbit@node0,rabbit@node1,rabbit@node2,rabbit@node3]}]},
 {running_nodes,[rabbit@node3,rabbit@node2,rabbit@node1,rabbit@node0]},
 {partitions,[]}]
...done.
```

Alternatively, install RabbitMQ and Erlang on a machine of your choice. Be sure to match versions of both to the cluster: the Management UI shows both the version of RabbitMQ and Erlang.

Then set your `~/.erlang.cookie` to match the cookie used in the cluster (you may have supplied this as part of the installation; see above).

You'll need to set up your `/etc/hosts` file to match the RabbitMQ nodes.

HAProxy Statistics

The HAProxy statistics page can be viewed at the IP address for the HAProxy node.

This page is only accessible via the internal IP address, so access will be required to your PCF network.

Identify the IP address of the HAProxy from the `Status` page in Ops Manager for the RabbitMQ tile

Installation Dashboard

Pivotal RabbitMQ

Settings Status Credentials Logs

Jobs on Availability Zone "drinks-cl"

JOB	INDEX	IPS	CID
RabbitMQ node	0	10.0.0.53	vm-f18b7503-528c-40f4-a12f-11a0b5c1d681
	1	10.0.0.54	vm-89a85369-ec4e-40a5-9a22-2ddb7609b1b1
HAProxy for RabbitMQ	0	10.0.0.55	vm-4bdebea3-27f2-4196-976f-0521171c17bc
RabbitMQ service broker	0	10.0.0.56	vm-3f59cf9e-c351-480b-abec-1da10053ba2e

Here,

this is 10.0.0.55

Identify the credentials for the HAProxy job, from the [Credentials](#) page in Ops Manager

Installation Dashboard

Pivotal RabbitMQ

Settings Status Credentials Logs

JOB	NAME	CREDENTIALS
RabbitMQ node	Vm Credentials	vcap / d6bf49afff721b12
	Server Admin Credentials	admin / admin
	Service Broker Rabbitmq Admin Credentials	broker / 5eb351936c223fa9
HAProxy for RabbitMQ	Vm Credentials	vcap / 097b077a938ec7ae
	Stats Dashboard	admin / 8b4b9e3344ba4203

Visit <http://10.0.0.55> and input the username & password to view the dashboard.

If you have got multiple HAProxys then there will be separate dashboards on each IP.

RabbitMQ® for Pivotal Cloud Foundry

Operation Tips

What should I check before deploying a new version of the tile?

Ensure that all nodes in the cluster are healthy via the RabbitMQ Management UI, or health metrics exposed via the firehose. You cannot rely solely on the `bosh instances` output as that reflects the state of the Erlang VM used by RabbitMQ and not the RabbitMQ application.

What is the correct way to stop and start RabbitMQ in PCF?

Only BOSH commands should be used by the operator to interact with the RabbitMQ application. For example:

```
bosh stop rabbitmq-  
server
```

```
bosh start rabbitmq-  
server
```

There are BOSH job lifecycle hooks which are only fired when rabbitmq-server is stopped through BOSH. You can also stop individual instances by running:

```
bosh stop JOB [index]
```



Note: Do not use `monit stop rabbitmq-server` as this does not call the drain scripts.

What happens when I run “bosh stop rabbitmq-server”?

BOSH starts the shutdown sequence from the bootstrap instance.

We start by telling the RabbitMQ application to shutdown and then shutdown the Erlang VM within which it is running. If this succeeds, we run the following checks to ensure that the RabbitMQ application and Erlang VM have stopped:

1. If `/var/vcap/sys/run/rabbitmq-server/pid` exists, check that the PID inside this file does not point to a running Erlang VM process. Notice that we are tracking the Erlang PID and not the RabbitMQ PID.
2. Check that `rabbitmqctl` does not return an Erlang VM PID

Once this completes on the bootstrap instance, BOSH will continue the same sequence on the next instance. All remaining rabbitmq-server instances will be stopped one by one.

What happens when “bosh stop rabbitmq-server” fails?

If the `bosh stop` fails, you will likely get an error saying that the drain script failed with:

```
result: 1 of 1 drain scripts failed. Failed Jobs: rabbitmq-server.
```

What do I do when “bosh stop rabbitmq-server” fails?

The drain script logs to `/var/vcap/sys/log/rabbitmq-server/drain.log`. If you have a remote syslog configured, this will appear as the `rmq_server_drain` program.

First, `bosh ssh` into the failing rabbitmq-server instance and start the rabbitmq-server job by running `monit start rabbitmq-server`). You will not be able to start

the job via `bosh start` as this always runs the drain script first and fails since the drain script is failing. Once rabbitmq-server job is running (confirm this via `monit status`), run `DEBUG=1 /var/vcap/jobs/rabbitmq-server/bin/drain`. This will tell why it is failing.

Logging, Heartbeats, and Metrics

Logging

In RabbitMQ® for Pivotal Cloud Foundry (PCF) 1.6.0 and above, you can designate an external syslog endpoint for RabbitMQ logs through Ops Manager at deployment time by performing the following steps:

1. From the Ops Manager Installation Dashboard, click the RabbitMQ tile.
2. In the RabbitMQ tile, click the **Settings** tab.
3. Click **Syslog**.
4. Enter your syslog address and port.
5. Click **Save**.
6. Return to the Ops Manager Installation Dashboard and click **Apply Changes** to redeploy with the changes.

A correctly configured system emits metrics for all RabbitMQ and HAProxy nodes deployed in the service. You can identify logs from individual nodes by their index, which corresponds to the index of the RabbitMQ nodes displayed in Ops Manager:

- The logs for RabbitMQ server nodes follow the format `[job=rabbitmq-server-partition-GUID index=X]`
- The logs for HAProxy nodes follow the format `[job=rabbitmq-haproxy-partition-GUID index=X]`
- The logs for the RabbitMQ service broker follow the format `[job=rabbitmq-broker-partition-GUID index=X]`

RabbitMQ and HAProxy servers are configured to log at the `info` level, and capture errors, warnings and informational messages.

Heartbeats

In RabbitMQ for PCF 1.6 and above, the key system components periodically emit heartbeats for RabbitMQ server nodes, HAProxy nodes, and the Service Broker. The heartbeats are Boolean metrics: `1` means the system is available, and `0` or the absence of a heartbeat metric means the service is not responding and should be investigated.

The heartbeats are visible on the firehose and look as follows:

- HAProxy heartbeat: `"/p-rabbitmq/haproxy/heartbeat" value:1 unit:"boolean"`
- RabbitMQ heartbeat: `"/p-rabbitmq/rabbitmq/heartbeat" value:1 unit:"boolean"`
- Service Broker heartbeat: `"/p-rabbitmq/service_broker/heartbeat" value:1 unit:"boolean"`

Metrics

The PCF firehose exposes the RabbitMQ and HAProxy metrics, and can direct these metrics to an external endpoint of your choice.

The metrics polling interval defaults to 30 seconds. This can be changed by navigating to the bottom of RabbitMQ cluster configuration page and entering a new value in the Metrics polling interval configuration box. **Metrics polling interval (min: 10).**

Metrics polling interval (min: 10) *


30

The emitted metrics follow the format of the example below:

```
origin:"p-rabbitmq" eventType:ValueMetric timestamp:1441188462382091652 deployment:"cf-rabbitmq" job:"cf-rabbitmq-node" index:"0" ip:"10.244.3.46" valueMetric: < name:"/p-rabbitmq/rabbitmq/system/m
```

RabbitMQ Metrics


The table below shows the current list of RabbitMQ metrics emitted and their description.

 **Note:** The name space for the metrics follows the format `/CF-SERVICE-NAME/NODE-TYPE/METRIC-NAME`.

Name Space	Unit	Description
<code>/p-rabbitmq/rabbitmq/erlang/erlang_processes</code>	count	The number of Erlang processes
<code>/p-rabbitmq/rabbitmq/system/memory</code>	MB	The memory in MB used by the node
<code>/p-rabbitmq/rabbitmq/connections/count</code>	count	The total number of connections to the node
<code>/p-rabbitmq/rabbitmq/consumers/count</code>	count	The total number of consumers registered in the node
<code>/p-rabbitmq/rabbitmq/messages/delivered</code>	count	The total number of messages with the status <code>deliver_get</code> on the node
<code>/p-rabbitmq/rabbitmq/messages/delivered_no_ack</code>	count	The number of messages with the status <code>deliver_no_ack</code> on the node
<code>/p-rabbitmq/rabbitmq/messages/delivered_rate</code>	rate	The rate at which messages are being delivered to consumers or clients on the node
<code>/p-rabbitmq/rabbitmq/messages/published</code>	count	The total number of messages with the status <code>publish</code> on the node
<code>/p-rabbitmq/rabbitmq/messages/published_rate</code>	rate	The rate at which messages are being published by the node
<code>/p-rabbitmq/rabbitmq/messages/redelivered</code>	count	The total number of messages with the status <code>redeliver</code> on the node
<code>/p-rabbitmq/rabbitmq/messages/redelivered_rate</code>	rate	The rate at which messages are getting the status <code>redeliver</code> on the node
<code>/p-rabbitmq/rabbitmq/messages/got_no_ack</code>	count	The number of messages with the status <code>get_no_ack</code> on the node
<code>/p-rabbitmq/rabbitmq/messages/get_no_ack_rate</code>	rate	The rate at which messages get the status <code>get_no_ack</code> on the node
<code>/p-rabbitmq/rabbitmq/messages/pending</code>	count	The number of messages with the status <code>messages_unacknowledged</code> on the node
<code>/p-rabbitmq/rabbitmq/system/file_descriptors</code>	count	The number of open file descriptors on the node
<code>/p-rabbitmq/rabbitmq/exchanges/count</code>	count	The total number of exchanges on the node
<code>/p-rabbitmq/rabbitmq/messages/available</code>	count	The total number of messages with the status <code>messages_ready</code> on the node
<code>/p-rabbitmq/rabbitmq/queues/count</code>	count	The number of queues on the node
<code>/p-rabbitmq/rabbitmq/channels/count</code>	count	The number of channels on the node

HAProxy Metrics

The table below shows the current list of HAProxy metrics emitted and their description.

 **Note:** The name space for the metrics follows the format `/CF-SERVICE-NAME/NODE-TYPE/METRIC-NAME`.

Name Space	Unit	Description
<code>/p-rabbitmq/haproxy/health/connections</code>	count	The total number of concurrent front-end connections to the server
<code>/p-rabbitmq/haproxy/backend/qsize/amqp</code>	size	The total size of the AMQP queue on the server
<code>/p-rabbitmq/haproxy/backend/retries/amqp</code>	count	The number of AMQP retries to the server
<code>/p-rabbitmq/haproxy/backend/ctime/amqp</code>	time	The total time to establish the TCP AMQP connection to the server

RabbitMQ® Entries in the VCAP_SERVICES Environment Variable

Applications running in Cloud Foundry gain access to the bound service instances via an environment variable credentials hash called `VCAP_SERVICES`. An example hash is shown below:

```
{
  "p-rabbitmq": [{
    "label": "p-rabbitmq",
    "name": "my-rabbit-service-instance",
    "plan": "standard",
    "tags": ["rabbitmq", "messaging", "message-queue", "amqp", "pivotal"],
    "credentials": {
      "dashboard_url": "http://pivotal-rabbitmq.your.pcf.example.com/#/login/b5d0ad14-4352-48e8-8982-d5b1d257029f/tavk86pnns1ddiqrtdtbchurn",
      "username": "b5d0ad14-4352-48e8-8982-d5b1d257029f",
      "vhost": "62e5ab21-7b38-44ac-b139-6aa97af01cd7",
      "password": "tavk86pnns1ddiqrtdtbchurn",
      "ssl": false,
      "hostname": "10.0.0.41",
      "hostnames": [
        "10.0.0.41",
        "10.0.0.51"
      ],
      "uri": "amqp://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41/62e5ab21-7b38-44ac-b139-6aa97af01cd7",
      "uris": [
        "amqp://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41/62e5ab21-7b38-44ac-b139-6aa97af01cd7",
        "amqp://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.51/62e5ab21-7b38-44ac-b139-6aa97af01cd7"
      ],
      "http_api_uri": "http://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41:15672/api",
      "http_api_uris": [
        "http://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41:15672/api",
        "http://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.51:15672/api"
      ],
      "protocols": {
        "amqp": {
          "password": "tavk86pnns1ddiqrtdtbchurn",
          "port": 5672,
          "ssl": false,
          "username": "b5d0ad14-4352-48e8-8982-d5b1d257029f",
          "vhost": "62e5ab21-7b38-44ac-b139-6aa97af01cd7",
          "host": "10.0.0.41",
          "hosts": [
            "10.0.0.41",
            "10.0.0.51"
          ],
          "uri": "amqp://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41:5672/62e5ab21-7b38-44ac-b139-6aa97af01cd7",
          "uris": [
            "amqp://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41:5672/62e5ab21-7b38-44ac-b139-6aa97af01cd7",
            "amqp://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.51:5672/62e5ab21-7b38-44ac-b139-6aa97af01cd7"
          ]
        },
        "management": {
          "username": "b5d0ad14-4352-48e8-8982-d5b1d257029f",
          "password": "tavk86pnns1ddiqrtdtbchurn",
          "path": "/api",
          "port": 15672,
          "ssl": false,
          "host": "10.0.0.41",
          "hosts": [
            "10.0.0.41",
            "10.0.0.51"
          ],
          "uri": "http://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41:15672/api",
          "uris": [
            "http://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.41:15672/api",
            "http://b5d0ad14-4352-48e8-8982-d5b1d257029f:tavk86pnns1ddiqrtdtbchurn@10.0.0.51:15672/api"
          ]
        }
      }
    }
  ]
}
```

You can search for your service by its `name`, given when creating the service instance, or dynamically via the `tags` or `label` properties. The `credentials` property can be used as follows:

- The top level properties `uri`, `uris`, `vhost`, `username`, `password`, `hostname` and `hostnames` provide access to the AMQP 0.9.1 protocol.
- A more flexible approach is provided by the `credentials.protocols` property, which has a key per enabled protocol. The possible keys are `amqp`, `management`, `mqtt`, and `stomp`. If SSL is enabled, then the keys will be `amqp+ssl`, `management+ssl`, `mqtt+ssl`, and `stomp+ssl` respectively.
- The values associated with each of these keys gives access credentials specific to each protocol. In all cases, URIs are provided, along with the individual components.

Connecting to a Highly Available RabbitMQ Cluster


The latest version of RabbitMQ tile 1.5.*, allows for a highly available cluster through multiple HAProxy nodes. The `hostnames`, `uris` and `hosts` properties have been added and should be used in preference over the equivalent singular properties. The singular properties are maintained for backwards

compatibility and will always contain the first value from the equivalent plural property. The singular properties will eventually be deprecated.

For example with two HAProxy jobs deployed the following properties will be present:

```
"hostname": "10.0.0.41",  
"hostnames": [  
  "10.0.0.41",  
  "10.0.0.51"]
```

Changing Enabled Plugins and Protocols

 **Note:** Removing or adding plugins/protocols may cause apps bound with RabbitMQ to break.

If you adjust the plugins and protocols enabled for RabbitMQ, you may need to force all app's `VCAP_SERVICES` environment variable to be regenerated. Adding and removing the following plugins require bound applications to be restaged:

- rabbitmq_management
- rabbitmq_stomp
- rabbitmq_mqtt
- rabbitmq_amqp1_0

In common with all services in [Pivotal Cloud Foundry](#) (PCF), the `VCAP_SERVICES` environment variable for an application is only modified when the application is bound to a service instance. Users will need to `cf unbind-service`, `cf bind-service` and `cf restage` their app in this scenario.

RabbitMQ® for PCF Release Notes

Pivotal recommends that you upgrade to the latest version of your current minor line, and then upgrade to the latest available version of the new minor line. For example, if you're on an older v1.7.x version, upgrade to the latest v1.7.x version before upgrading to the latest v1.8.x version.

See the [Product Compatibility Matrix](#) for product versions and upgrade paths.

v1.7.x

For v1.7.x versions of RabbitMQ for PCF, see the [release notes](#) in the v1.7 version of this documentation.

v1.6.x

Pivotal released v1.6.0 in May 2016, and the latest patch version is v1.6.21.

v1.6.25

Release Date: August 7, 2017

- Requires stemcell 3312.32

Packages:

- OSS RabbitMQ v3.6.10
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell

v1.6.24

Release Date: July 7, 2017

- Requires stemcell v3312.29

Packages:

- OSS RabbitMQ v3.6.10
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- Update RabbitMQ server to 3.6.10

v1.6.23

Release Date: June 22, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3312.29

Packages:

- OSS RabbitMQ v3.6.9
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell

v1.6.22

Release Date: June 20, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3312.28

Packages:

- OSS RabbitMQ v3.6.9
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- Update OTP version to 19.3.5

v1.6.21

Release Date: June 1, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3312.28

Packages:

- OSS RabbitMQ v3.6.9
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell

v1.6.20

Release Date: May 25, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3312.26

Packages:

- OSS RabbitMQ v3.6.9
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell

v1.6.19

Release Date: April 27, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3312.24

Packages:

- OSS RabbitMQ v3.6.9
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell

v1.6.18

Release Date: March 31, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3312.22

Packages:

- OSS RabbitMQ v3.6.9
- Erlang v19.3
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell, and RabbitMQ

v1.6.16

Release Date: March 3, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3233.14

Packages:

- OSS RabbitMQ v3.6.6
- Erlang v18.3.4.4

- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell.

v1.6.15

Release Date: January 27, 2017

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3233.12

Packages:

- OSS RabbitMQ v3.6.6
- Erlang v18.3.4.4
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell.

v1.6.14

Release Date: December 15, 2016

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3233.8

Packages:

- OSS RabbitMQ v3.6.6
- Erlang v18.3.4.4
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell.

v1.6.13

Release Date: December 8, 2016

Important: You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.6.10 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3233.6

Packages:

- OSS RabbitMQ v3.6.6
- Erlang v18.3.4.4
- HAProxy v1.6.4

Features included in this release:

- This is a security release addressed by a new stemcell.

v1.6.12

Release Date: November 22, 2016

Important: You will experience a **small window of downtime** during this particular deployment as the RabbitMQ cluster is taken offline and each nodes is upgraded to v3.6.6. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3233.4

Packages:

- OSS RabbitMQ v3.6.6 (new)
- Erlang v18.3.4.4
- HAProxy

Features included in this release:

- This version of RabbitMQ addresses a security vulnerability in the MQTT plugin. For more information, see [here](#).
- You can only upgrade this version of the tile to v1.7.7 or above.

v1.6.10

Release Date: October 21, 2016

- Requires stemcell v3233.2.
- This will be a rolling deployment.

Packages:

- OSS RabbitMQ v3.6.5
- Erlang v18.3.4.4 (new)
- HAProxy v1.6.4

Features included in this release:

- Update to drain scripts during RabbitMQ node shutdown to cleanly shutdown the application and increase logging.
- You can only upgrade this version of the tile to v1.7.6.

v1.6.9

Release Date: October 13, 2016

Features included in this release:

- Using stemcell v3233.2
- OSS RabbitMQ v3.6.5
- Erlang v18.1
- HAProxy v1.6.4
- Fixed issue with SSL configuration options in Operations Manager swapping the 'Enable verify_peer SSL certificate verification' option and 'Require peer certificate validation' option. Existing settings will be migrated with no input from operators.

v1.6.8

Release Date: October 10, 2016

Features included in this release:

- Using stemcell v3233.1
- OSS RabbitMQ v3.6.5
- Erlang v18.1
- HAProxy v1.6.4
- Fixed issue with SSL configuration options in Operations Manager swapping the 'Enable verify_peer SSL certificate verification' option and 'Require peer certificate validation' option. Existing settings will be migrated with no input from operators.

v1.6.7

Release Date: September 27, 2016

Features included in this release:

- Using stemcell v3232.21
- RabbitMQ is updated to v3.6.5. Each node will be upgraded in turn and the entire cluster will not be taken offline
- Customers should read the accompanying “Additional steps for customers going from v1.6.x to v1.6.5” document.

v1.6.6

Release Date: August 25, 2016

Features included in this release:

- Using stemcell v3232.17 for USN-3064-1
- Customers upgrading from any previous version other than v1.6.4 should expect the RabbitMQ cluster to be taken offline while the new RabbitMQ package is applied
- Customers should read the accompanying “Additional steps for customers going from v1.6.x to v1.6.5” document.

v1.6.5

Release Date: August 18, 2016


Features included in this release:

- Using stemcell v3232.13
- Update to the metrics release to ensure processes shutdown efficiently and reliably in all situations
- Update to optimize RabbitMQ startup scripts and BOSH monitoring (monit)
- RabbitMQ v3.6.3 release is included and the option to enable the event_exchange plugin is available in Ops Manager

v1.6.4

Release Date: July 15, 2016

Features included in this release:

- Updated stemcell to v3232.13
- Removal of util-linux from packages
- Updated to latest version of service-metrics release
- Updated job deployment behaviour to limit to one job at a time
- Updated the version of RabbitMQ to version [v3.6.3](#) 

v1.6.3

Release Date: June 30, 2016

Features included in this release:

- Updated stemcell to v3232.12 for USN-3020-1

v1.6.2

Release Date: June 15, 2016

Features included in this release:

- This release incorporates stemcell v3232.8

v1.6.1

Release Date: June 8, 2016

Features included in this release:

- This release incorporates stemcell v3232.6 which has fixes for the following:
 - USN-2985-2
 - USN-2981-1
 - USN-2970-1
 - USN-2966-1

v1.6.0

Release Date: May 26, 2016

Features included in this release:

- Syslog endpoints for HAProxy and RabbitMQ can now be configured via Ops Manager
- The RabbitMQ service broker will emit logs via the configured syslog endpoint
- RabbitMQ and HAProxy Metrics are now exposed on the firehose
- RabbitMQ and HAProxy heartbeats are now exposed as metrics
- For SSL configuration you can now specify either `verify` and `fail_if_no_peer_cert` options
- SSL Certificates are validated during entry
- You can set the metrics polling interval when you deploy
- Includes the latest version of RabbitMQ OSS v3.6.2
- You may now select the partition response for RabbitMQ to be either `pause_minority` or `automatic`. The default behavior has been changed from `automatic` to `pause_minority`
- RabbitMQ v3.6.0 changed the default TTL for MQTT subscriptions from 30 minutes to 24 hours. This may have caused an issue for existing queues and subscribers when upgrading, so the `rabbitmq_mqtt.subscription_ttl` default is set to 30 minutes (1800000 ms)
- The default swap space has been increased to match system memory

v1.5.x and Earlier

For v1.5.x and earlier versions of RabbitMQ for PCF, see the release notes in the [v1.5 version](#) of this documentation.

RabbitMQ® for Pivotal Cloud Foundry Documentation

Resource requirements

The following table shows the default resource and IP requirements for installing the tile:

Product	Resource	Instances	CPU	Ram	Ephemeral	Persistent	Static IP	Dynamic IP
RabbitMQ	RabbitMQ Node	3	2	8192	4096	8192	1	0
RabbitMQ	HAProxy for RabbitMQ	1	1	2048	4096	0	1	0
RabbitMQ	RabbitMQ Service Broker	1	1	2048	4096	0	0	1
RabbitMQ	Compilation	2	2	2048	4096	0	0	1
RabbitMQ	Broker Registrar	1	1	1024	2048	0	0	1
RabbitMQ	Broker De-Registrar	1	1	1024	2048	0	0	1

Notes:

- The number of `RabbitMQ Node` can be increased if required.