

# RabbitMQ for PCF®

Version 1.7

## User's Guide

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## RabbitMQ® for Pivotal Cloud Foundry Documentation

**Note:** RabbitMQ for PCF v1.7 is no longer supported. The support period for v1.7 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

The following table provides version and version-support information about RabbitMQ for (PCF):

Element	Details
Version	v1.7.42
Release date	March 28, 2018
Software component version	RabbitMQ OSS v3.6.15
Compatible Ops Manager version(s)	v1.8.x, v1.9.x, and v1.10.x
Compatible Elastic Runtime version(s)	v1.8.x, v1.9.x, and v1.10.x
IaaS support	AWS, Azure, GCP, OpenStack, and vSphere
IPsec support	No

## Upgrading to the Latest Version

Upgrades are normally a rolling deployment unless otherwise noted in the release notes.

**Note:** Customers installing the v1.7 tile into PCF v1.8, v1.9, and v1.10 must select the right secure messaging option for metrics or else they will face installation issues. Please read [this information](#) before installing.

## Compatibility Information

Consider the following compatibility information before upgrading RabbitMQ for PCF:

- Any tile upgrading to RabbitMQ v3.6.9 or later will require downtime as the RabbitMQ cluster cannot run in mixed-mode with versions lower than v3.6.9.
- Any tile upgrading to RabbitMQ v3.6.6 or later will require downtime as the RabbitMQ cluster cannot run in mixed-mode with versions lower than v3.6.6.
- Pivotal recommends that customers always upgrade to the latest patch version of their minor line, and then only upgrade to the latest available new minor patch. This is to ensure that RabbitMQ or Erlang versions are not downgraded during the process.
- You can only upgrade this tile from v1.6.5 or later. This must be completed before upgrading from Ops Manager v1.7x to v1.8.x.
- Customers with v1.6.6 of the tile can upgrade to v1.7.0 or later.
- Customers with v1.6.7–9 of the tile should only upgrade to v1.7.4 or later.
- Customers with v1.6.10 or later of the tile should only upgrade to v1.7.7 or later.
- 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, see the full [Product Compatibility Matrix](#).

Ops Manager Version	Supported Upgrades from Imported RabbitMQ Installation
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v1.6.x and v1.5.x	<ul style="list-style-type: none"> <li>From v1.5.0 through to v1.5.28, and v1.6.0 through to v1.6.20</li> </ul>
v1.7.x	<ul style="list-style-type: none"> <li>From v1.5.9 through to v1.5.28, and v1.6.0 through to v1.6.20</li> </ul>
v1.8.x, v1.9.x	<ul style="list-style-type: none"> <li>From v1.7.0 through to v1.7.16</li> </ul>
v1.10.x	<ul style="list-style-type: none"> <li>From v1.7.13 through to v1.7.16</li> </ul>

## 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, and STOMP protocols
- 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
- Automated upgrades of RabbitMQ for major, minor and patch releases (see release notes for downtime requirements)
- Configure the end point for the RabbitMQ Syslog
- RabbitMQ and HAProxy metrics are exposed on the Firehose

## Install RabbitMQ for PCF

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 v1.7.0 or later.

## 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.
- IPsec does not work with this version of the tile and it must be installed into a non-IPsec subnet or by excluding the deployment IPs following the steps

in the documentation.

## Known Issues

- 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 on registering brokers see the [CloudFoundry documentation](#).
- In the `1.5.0`, `1.5.1`, `1.5.2`, `1.5.3` releases, 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 later 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.
- It is not currently possible to set the HAProxy instance count to 0.
- IPsec is not required for the RabbitMQ tile since it can be secured via TLS, which will encrypt traffic from clients to the RabbitMQ cluster. RabbitMQ should be deployed in its own subnet outside the IPsec mesh. Refer to the documentation to set up TLS.
- In rare circumstances when manually stopping all RabbitMQ nodes in a cluster, it is possible for all queue masters to reside on the last node to be stopped. This is a known limitation in RabbitMQ and should you encounter it please contact support.
- Cannot scale-out if `Erlang Cookie` is not specified
- Changing `Erlang Cookie` value results in failed deployment
- Changing networks an/or IP addresses for the `RabbitMQ Server` job results in a failed upgrade deployment. For details, see [this page](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## Feedback

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

## Deploying the RabbitMQ® Service

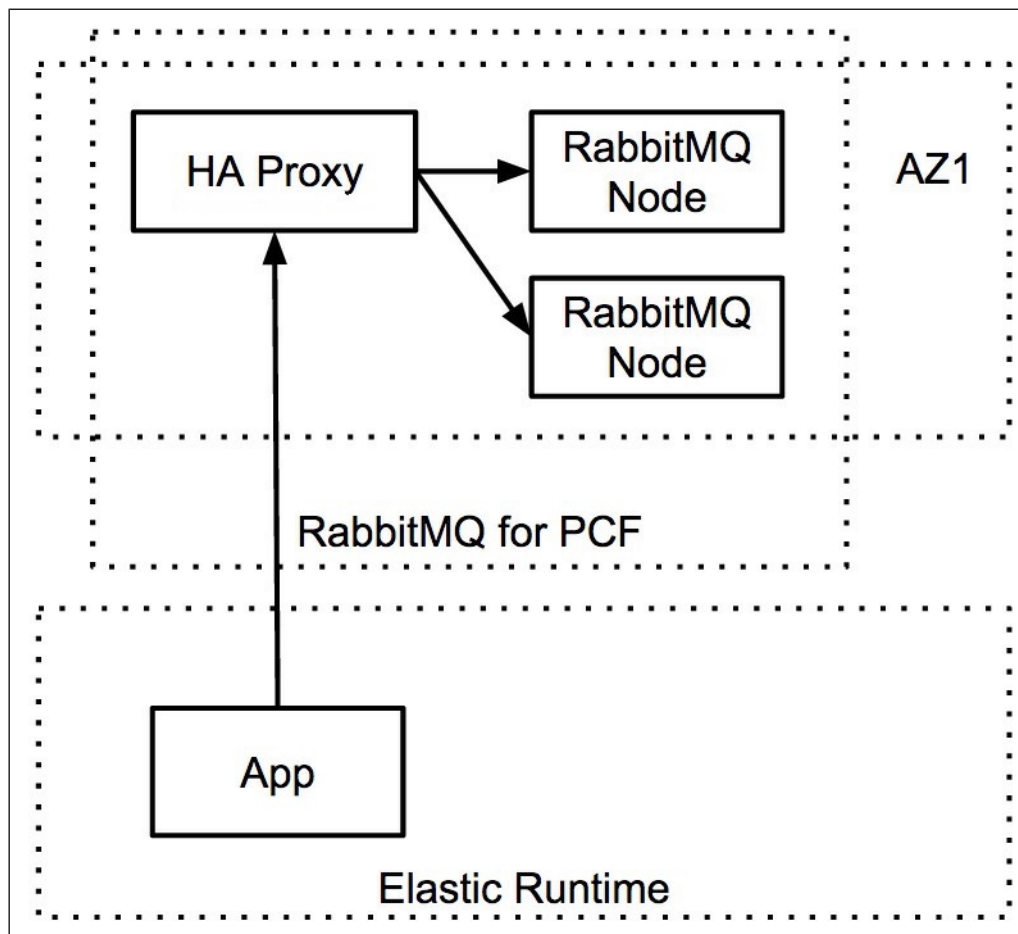
### Default Deployment

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).

The default configuration is for testing purposes only and it is recommended that customers have a minimum of **3 RabbitMQ nodes** and **2 HAProxy nodes**



### Considerations for this deployment

- Provides HA for the RabbitMQ cluster
- Queues must be judiciously configured to be HA as they are placed on one node by default
- Customers should decide on which partition behaviour is best suited to their use case. For two nodes 'autoheal' is preferred
- 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.

### Multi-AZ Deployment

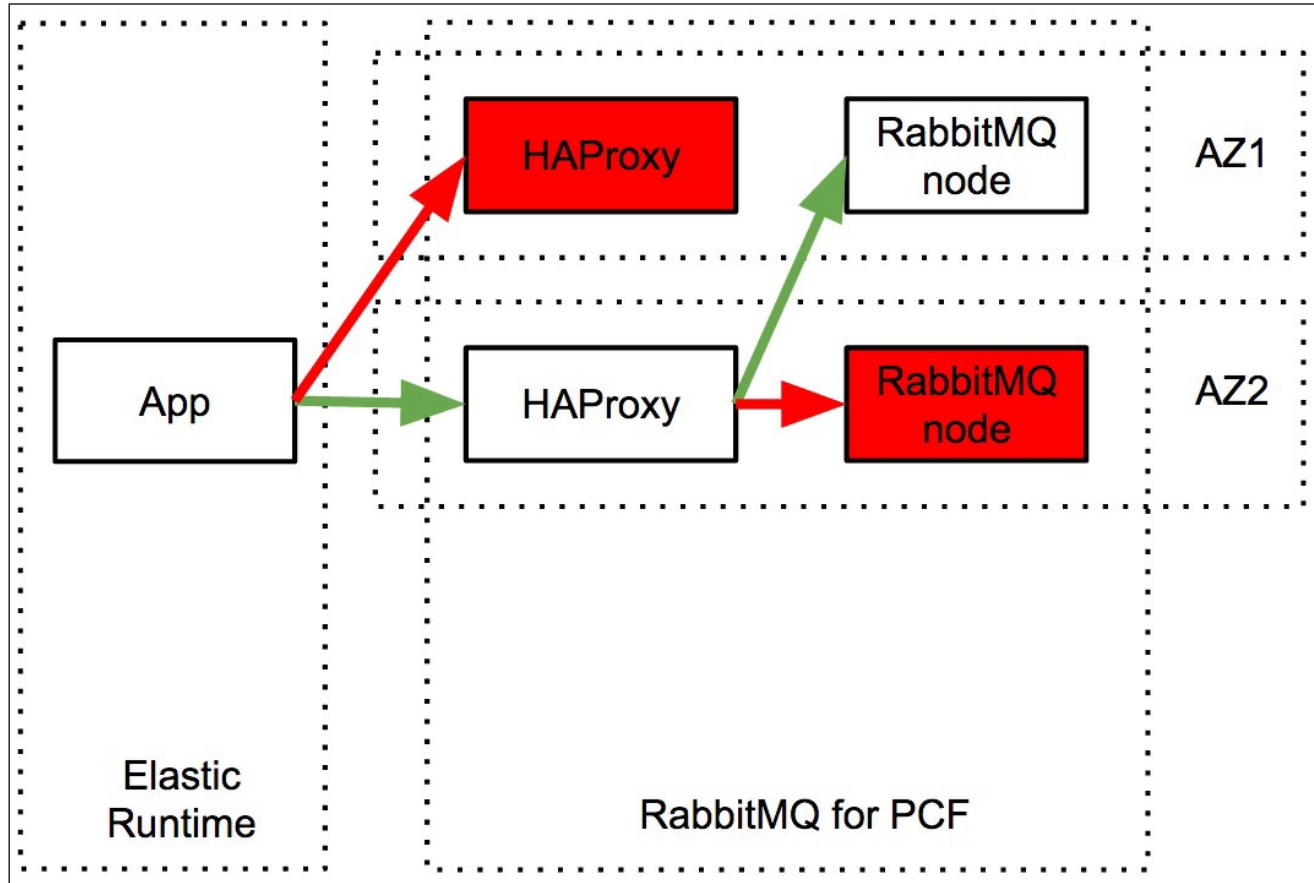
RabbitMQ can be deployed in a multiple availability zone environment if the latency between the zones can be guaranteed to be less than 10ms. This is

critical for cluster performance and recovering from network partitions. High latency can look like network partitions from the RabbitMQ cluster perspective.

RabbitMQ server nodes should be scaled to an odd number and should be greater than 3.

Replication of queues should only be used where required as it can have a big impact on system performance.

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.

It is also recommend that customers chooses an odd number of RabbitMQ server nodes of three or more.

## 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

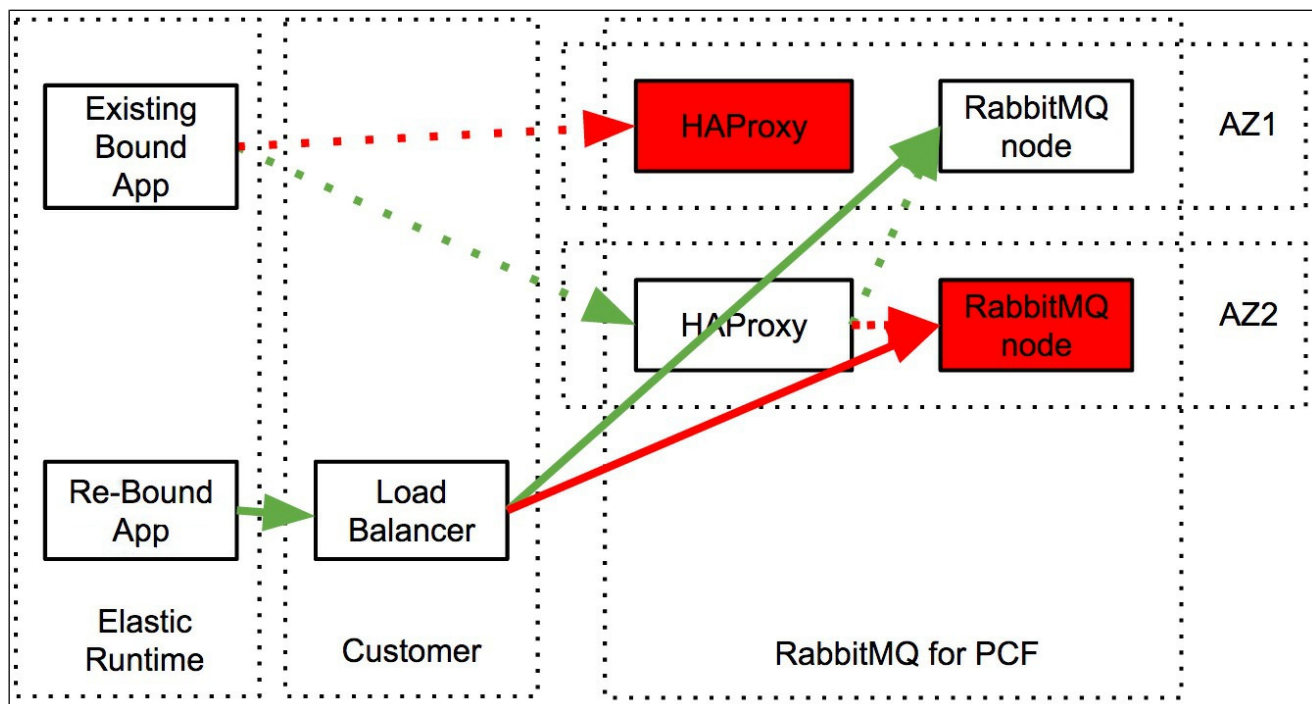
- Requires IaaS configuration for availability zones ahead of deploying the RabbitMQ tile
- It is required that cross-AZ latency be less than 10ms
- Application developers will be handed the IPs of each deployed HAProxy in their environment variables
- Queues must be judiciously configured to be HA as they are placed on one node by default
- Customers should decide on which partition behaviour is best suited to their use case. For 3 or more nodes 'pause\_minority' is preferred

## 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 multi AZ 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 1
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 HAProxys 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"> <li>The RabbitMQ cluster will be taken offline for the duration of the upgrade</li> </ul>
Minor Tile Version Upgrade	<ul style="list-style-type: none"> <li>The RabbitMQ cluster will be taken offline for the duration of the upgrade</li> </ul>
Patch Tile Version Upgrades	<ul style="list-style-type: none"> <li>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.</li> </ul>
Stemcell Only - Patch Tile Version Upgrades	<ul style="list-style-type: none"> <li>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.</li> </ul>

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.



## 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 through 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 want 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  
☐ rabbitmq\_jms\_topic\_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
- 4001 = CF Loggregator - Doppler
- 8300 - 8301 = Consul

## Security Groups

To enable access to the RabbitMQ tile service, you must ensure your security group allows access to the HAProxy and RabbitMQ Service Broker VMs configured in your deployment. You can obtain the IP addresses for these from the Ops Manager **Status** page for the RabbitMQ tile. Ensure the following ports are enabled for those VMs:

- Inbound

Port(s)	Protocol(s)	Source	Reason
15672	tcp	Broker and internet(*)	Allowing access to the RabbitMQ Management Dashboard & API
5671 - 5672	tcp	All AMQP clients	RabbitMQ will listen on those ports for AMQP
1883, 8883	tcp	All MQTT clients	RabbitMQ will listen on those ports for MQTT
61613, 61614	tcp	All STOMP clients	RabbitMQ will listen on those ports for STOMP
15674	tcp	All Web STOMP clients	RabbitMQ will listen on this port for STOMP-over-WebSockets
4567	tcp	ERT	ERT sends commands to the Service Broker for RabbitMQ
3457 - 3459	tcp	ERT	Between RabbitMQ and ERT network for Metrics
8300 - 8301	tcp, udp	ERT	Between RabbitMQ and ERT network for Consul

(\*) Everyone that needs to access the RabbitMQ Management Dashboard & API externally

- Outbound


Port(s)	Protocol(s)	Destination	Reason
3457 - 3459	tcp	ERT	Between RabbitMQ and ERT network for Metrics
4001	tcp	ERT	From RabbitMQ to ERT (etcd) for Metron
8300 - 8301	tcp, udp	ERT	Between RabbitMQ and ERT network for Consul

The following 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:** The service is unusable without Application Security Groups.

## 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
HAProxy IPs	61613	tcp	Application containers using Web STOMP

Create an ASG name `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. 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

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

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

No other plugins are automatically configured for use with SSL.

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

For more information about SSL support, see <https://www.rabbitmq.com/ssl.html>.

## Erlang Cookie

You can provide an Erlang cookie to be used by the cluster. 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

### Scaling Known Issue

If you have not set the Erlang cookie and you want to scale-out your cluster size. You'll need to perform the following steps:

- Follow the steps for [troubleshooting with the BOSH CLI](#)
- `bosh ssh rabbitmq-server/0`
- `sudo -i`
- `echo $(cat /var/vcap/store/rabbitmq/.erlang.cookie)`
- Paste the value from the above command into the Erlang cookie field displayed above.

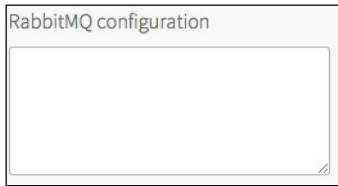
You'll then be able to adjust the size of your cluster and run **Apply Changes**.

### Changing the Value Known Issue

If you want to change your Erlang cookie value, it's required that you stop your RabbitMQ cluster first. To do this, target your BOSH Director, then issue a `bosh stop rabbitmq-server` command.

## RabbitMQ Config

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



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

For more information about the RabbitMQ configuration, see <https://www.rabbitmq.com/configure.html>.

## TLS Support

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



You can enable it again by selecting 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

RabbitMQ for PCF does not support changing the IP addresses which have been assigned to the RabbitMQ deployments. Doing so will cause the deployment to fail. For example you cannot change the subnet into which the RabbitMQ cluster was originally provisioned. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## Static IPs

### Switching from dynamic IPs to static IPs (Upgrading)

It is not possible to switch from dynamic IPs to a different set of static IPs, but you can set up Ops Manager so the current set of dynamically assigned IPs will always continue to be used.

1. Go to the Status page on the RabbitMQ product.
2. Note the IPs for the RabbitMQ Server and HAProxy for RabbitMQ jobs, in the order nodes appear in the UI.
3. Go to the Settings tab, and navigate to the Networking page.
4. Fill the IP addresses you got from the Status page. IP addresses should be in a comma-separated list.



HAProxy Static IPs
<input type="text" value="10.0.48.51,10.0.32.7"/>
RabbitMQ Server Static IPs
<input type="text" value="10.0.48.25,10.0.48.58,10.0.32.5"/>

## 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

The configuration box shown below can be used by Operators to set a default queue and an exchange policy to be applied to their RabbitMQ cluster. We recommend that you use the RabbitMQ Management Interface to make configuration changes after deployment.

An example policy is provided in the configuration box, but it is not enabled or applied and is intended only as a guide. Operators should consider some of the performance implications of making queues and exchanges highly available, and refer to the following documentation for more information: <https://www.rabbitmq.com/ha.html>

The following rules apply to policies set through this configuration box:

- 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 will be applied only to any new instances
- The policy can only be deleted manually from the RabbitMQ nodes
- Policies can be added dynamically using the RabbitMQ Management Interface

### Viewing or changing the policy

In Ops Manager on the RabbitMQ tile is a left-hand menu item named **RabbitMQ Policy**. The checkbox is not enabled by default, and so no policy will be applied.

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 should meet valid RabbitMQ policy criteria. No validation occurs during the deployment, and errors can cause the deployment to fail or policies to be applied incorrectly.

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

### RabbitMQ dashboard

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

The example policy is applied to all queues and given a rank of `50`. This allows you to override it 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
<b>operator_set_policy</b>	.*	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:  ☐ Regex (?)

Overview			Messages			Message rates			+/-
Name	Features	State	Ready	Unacked	Total	incoming	deliver / get	ack	
test	D operator_set_policy	<div>running</div>	0	0	0				

## Network partition behavior

You can change how RabbitMQ acts 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 choose the option you want before deploying, or the default `pause_minority` will be used. For production purposes, we recommend that customers have at least three RabbitMQ server nodes and two HAProxies spread across low latency availability zones.

## Clustering and Network Partitions

### Clustering in RabbitMQ for PCF

In RabbitMQ for PCF, the RabbitMQ® broker is always deployed as a cluster of one or more virtual machines (nodes). A RabbitMQ broker is a logical grouping of one or several Erlang nodes, each running the RabbitMQ application and sharing users, virtual hosts, queues, exchanges, bindings, and runtime parameters.

#### What is Replicated between nodes in a RabbitMQ cluster?

All data/state required for the operation of a RabbitMQ broker is replicated across all nodes. An exception to this are message queues, which by default reside on one node, though they are visible and reachable from all nodes. This means that the RabbitMQ cluster may be available and serving requests, while an individual queue residing on a single node is offline.

Replicating message queues across nodes is an expensive operation and should only be done to the extent needed by the application. To understand more about replicating queues across nodes in a cluster, see the [documentation](#) on high availability.

### Automatic Network Partition Behaviors in RabbitMQ Clusters

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
<b>rabbit@6031f2ce968ce856e9f684c504f6aecd</b>	20 1024 available	1 829 available	177 1048576 available	40MB 3.1GB high watermark	7.3GB 977kB low watermark	Disc 2 Stats
<b>rabbit@623a32cce88bc994de244cec4e6c6085</b>	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 <a href="#">Add Service</a>		
SERVICE INSTANCE	SERVICE PLAN	BOUND APPS
rabbit <a href="#">Manage</a>   <a href="#">Documentation</a>   <a href="#">Support</a>   <a href="#">Delete</a>	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 want 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 will fail since the drain script is failing.

Once the `rabbitmq-server` job is running, which you can confirm via `monit status`, run `DEBUG=1 /var/vcap/jobs/rabbitmq-server/bin/drain`. This tells you exactly why it is failing.

## Configuring RabbitMQ in an IPsec environment

 **Note:** If deploying RabbitMQ for PCF in an IPsec environment, the following steps **must** be performed

This option will configure and deploy RabbitMQ for PCF in a way that the machines in the deployment will not be in an IPsec network. This is necessary for cluster formation of RabbitMQ. As a result, we recommend you [configure RabbitMQ for PCF to use TLS](#).

### Limitations & Risks

- You can only deploy RabbitMQ to a single AZ.
- Once IPs have been dynamically assigned (from a prior deployment) you cannot assign different static IPs.

### Installing the tile

1. Import and configure the RabbitMQ tile as usual, ensuring that you select only a single AZ.
2. On the Networking page enter the correct number of static IPs required for the number of HAProxy and RabbitMQ Server nodes you have configured on the resources page. These must be in a subnet on the AZ that you've configured the product to use.
3. Do not click Apply Changes until completing the following step.
4. Following the [IPsec Add-On documentation](#) add the static IPs you have configured to the `no_ipsec_subnets` list and update your runtime-config as the guide recommends.
5. Go back to the Installation Dashboard and click Apply Changes to deploy the changes. This will cause an update of all products, as the runtime-config has to be applied to all products.
6. Optionally, you can verify that traffic to the RabbitMQ Server and HAProxy nodes is unencrypted:
  - a. SSH into a node which should not be encrypted
  - b. Run `sudo tcpdump -i eth0 "ip proto 50"`, you should see no packets logged. This verifies there are no IPsec encrypted packets on that network interface. An IPsec encrypted packet will look like this:

```
11:13:07.801761 IP cloud-controller-0.node.dc1.cf.internal > ip-10-0-48-12.eu-west-1.compute.internal:
ESP(spi=0xcbb4206d,seq=0x2e4), length 232
```

## 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.

### Configuring Secure Communication

RabbitMQ for PCF v1.7.13 lets the operator turn on/off TLS communications for metrics, via a `Use non-secure communication for metrics` checkbox on the metrics configuration page in Ops Manager. Configure this checkbox for different versions of PCF as follows:

- **PCF v1.8:** Select this checkbox to send metrics to the Firehose.
- **PCF v1.9:** Clear this checkbox to send metrics to the Firehose securely, or select it to send metrics insecurely.
- **PCF v1.10 and later:** Clear this checkbox to send metrics to the Firehose and avoid errors.


## RabbitMQ metrics configuration

Metrics polling interval (min: 10) \*


☐ Use non-secure communication for metrics

Save

Setting this checkbox incorrectly can cause a `Cannot generate manifest... unknown property "cf_etcd_client_cert"` error:


PCF Ops Manager

admin ▾

 Please review the errors below

- Cannot generate manifest for product RabbitMQ: Error in ( (.properties.metrics\_tls\_disabled.value ? ..cf.etcd\_server.ips : .properties.etcd\_machines.parsed\_strings )); unknown job "etcd\_server" (Product "RabbitMQ" / Job: nil)

Stop and fix errors

## Polling Interval

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) \*

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

#### v1.7.42

Release Date: March 28, 2018

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.52
- This version of the tile can only be installed in Ops Manager v1.8, v1.9, and v1.10.

Packages:

- OSS RabbitMQ v3.6.15
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a maintenance release that updates the required stemcell.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

#### v1.7.41

Release Date: March 23, 2018

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.51
- This version of the tile can only be installed in Ops Manager v1.8, v1.9, and v1.10.

Packages:

- OSS RabbitMQ v3.6.15
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a security release addressed by a new stemcell. Addressed vulnerabilities:
  - [USN-3586-1](#)
  - [USN-3584-1](#)

## Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.40

**Release Date:** February 26, 2018

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.50
- This version of the tile can only be installed in Ops Manager v1.8, v1.9, and v1.10.

## Packages:

- OSS RabbitMQ v3.6.15
- Erlang v19.3.6
- HAProxy v1.6.13

## Features included in this release:

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

## Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.39

**Release Date:** January 31, 2018

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.48
- This version of the tile can only be installed in Ops Manager v1.8, v1.9, and v1.10.

## Packages:

- OSS RabbitMQ v3.6.15
- Erlang v19.3.6
- HAProxy v1.6.13

## Features included in this release:

- Update RabbitMQ to v3.6.15. For more information, see [RabbitMQ 3.6.15 Release Notes](#).

## Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.38

**Release Date:** January 24, 2018

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.48
- This version of the tile can only be installed in Ops Manager v1.8, v1.9, and v1.10.

Packages:

- OSS RabbitMQ v3.6.14
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a security release addressed by a new stemcell that fixes Spectre vulnerabilities.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.37

**Release Date:** January 19, 2018

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.47
- This version of the tile can only be installed in Ops Manager v1.8, v1.9 and v1.10.

Packages:

- OSS RabbitMQ v3.6.14
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a security release addressed by a new stemcell that fixes vulnerabilities in the GNU C Library.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.36

**Release Date:** January 11, 2018

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.46
- This version of the tile can only be installed in Ops Manager v1.8, v1.9 and v1.10.

Packages:

- OSS RabbitMQ v3.6.14
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a security release addressed by a new stemcell that fixes the Meltdown security issue. For more information about Meltdown, see [Pivotal Vulnerability Report: Meltdown and Spectre Attacks](#) [↗](#)

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#) [↗](#).

## v1.7.34

Release Date: December 15, 2017

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell 3363.44
- This version of the tile can only be installed in Ops Manager v1.8, v1.9 and v1.10.

Packages:

- OSS RabbitMQ v3.6.14
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a security release addressed by a new stemcell
- Go update for security fixes

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#) [↗](#).

## v1.7.31

Release Date: December 6, 2017

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline, and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.42
- This version of the tile can only be installed in Ops Manager v1.8, v1.9 and v1.10.

Packages:

- OSS RabbitMQ v3.6.14
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a security release addressed by a new stemcell

## Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.30

**Release Date:** November 2, 2017

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.41
- This version of the tile can only be installed in Ops Manager v1.8, v1.9 and v1.10.

## Packages:

- OSS RabbitMQ v3.6.12
- Erlang v19.3.6
- HAProxy v1.6.13

## Features included in this release:

- This is a security release addressed by a new stemcell

## Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.28

**Release Date:** September 20, 2017

**⚠ IMPORTANT:** If you are upgrading from v1.7.14 or earlier, you will experience a **small window of downtime** during this deployment when the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.37
- This version of the tile can only be installed in Ops Manager v1.8 or later.

## Packages:

- OSS RabbitMQ v3.6.12
- Erlang v19.3.6
- HAProxy v1.6.13

## Features included in this release:

- Stemcell bump

## Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.27

**Release Date:** September 15, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.31
- This version of the tile can only be installed in Ops Manager v1.8 or later.

Packages:

- OSS RabbitMQ v3.6.12
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- Update to RabbitMQ 3.6.12: this involves [major changes](#) to the memory calculations.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For more information, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.26

**Release Date: August 21, 2017**

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.31
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

Packages:

- OSS RabbitMQ v3.6.10
- Erlang v19.3.6
- HAProxy v1.6.13

Features included in this release:

- This is a security release addressed by a new stemcell

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.25

**Release Date: August 16, 2017**

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.30
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.24

Release Date: August 7, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.29
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.23

Release Date: July 21, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.26.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

Packages:

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

Features included in this release:

- Delete management user when deleting a vhost

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).

## v1.7.22

Release Date: July 7, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.10 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.26.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- RabbitMQ for PCF v1.7.22 and earlier has a bug that does not delete management users, `mu-*`, when a service is deleted. To automate deletion of these users, contact [Pivotal Support](#).

## v1.7.21

Release Date: June 22, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.9 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.26.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.



## v1.7.20

Release Date: June 20, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.9 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.25.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

Packages:

- OSS RabbitMQ v3.6.9
- Erlang v19.3.6
- HAProxy v1.6.4

Features included in this release:

- Updates OTP version to 19.3.6

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.19

Release Date: June 1, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this deployment if you are upgrading from v1.7.14 or earlier, as the RabbitMQ cluster is taken offline and each node is upgraded to RabbitMQ v3.6.9 and Erlang 19. Pivotal recommends that you communicate with your app owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.25.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.17

Release Date: May 25, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.14 or below as

the RabbitMQ cluster is taken offline and each nodes is upgraded to RabbitMQ v3.6.9 and Erlang 19. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.24.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.16

Release Date: April 27, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.14 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to RabbitMQ v3.6.9 and Erlang 19. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.20.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.15

Release Date: March 31, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.14 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to RabbitMQ v3.6.9 and Erlang 19. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3363.14.

- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

#### Packages:

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

#### Features included in this release:

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

#### Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.14

**Release Date:** March 10, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.6 or below as the RabbitMQ cluster is taken offline and each nodes is upgraded to RabbitMQ v3.6.6 and Erlang 19. Pivotal recommends that you communicate with your application owners in advance to minimize the impact of this downtime.

- Requires stemcell v3263.21.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

#### 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.

#### Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.13

**Release Date:** March 3, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.6 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 v3263.20.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

#### 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.
- Includes `rabbitmq_jms_topic_exchange` plugin support.
- Migrate metrics configuration to a new form and introduces a `Use non-secure communication for metrics` checkbox for Ops Manager 1.10 compatibility.
- Includes consul as a dependency of Loggregator.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.10

Release Date: January 27, 2017

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.6 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 v3263.17.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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.
- It is now possible to set static IP addresses for HAProxy and/or RabbitMQ server nodes via Ops Manager

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.9

Release Date: December 15, 2016

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.6 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 v3263.13.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.8

Release Date: December 8, 2016

**⚠ IMPORTANT:** You will experience a **small window of downtime** during this particular deployment if you are upgrading from v1.7.6 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 v3263.12.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

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.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.7

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 v3263.8.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

Packages:

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

Features included in this release:

- The default number of RabbitMQ server nodes has been increased from 2 to 3. Customers with existing deployments will be unaffected.
- This version of RabbitMQ addresses a security vulnerability in the MQTT plugin. For more information, see [here](#).

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.6

**Release Date: October 21, 2016**

- Requires stemcell v3263.8 for USN-3106-2: Linux kernel (Xenial HWE) vulnerability.
- This will be a rolling deployment.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

Features included in this release:

- Update to drain scripts during RabbitMQ node shutdown to cleanly shutdown the application and increase logging.
- Contains OSS RabbitMQ v3.6.5.
- Erlang v18.1.
- HAProxy v1.6.4.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.5

**Release Date: October 14, 2016**

- Requires stemcell v3263.7.
- This will be a rolling deployment.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

Features included in this release:

- OSS RabbitMQ v3.6.5.
- Erlang v18.1.
- HAProxy v1.6.4.
- Includes stability and bug fixes.

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.4

**Release Date: October 13, 2016**

- Requires stemcell v3263.3.
- You can upgrade to this version from v1.6.8 or later.
- This will be a rolling deployment.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.
- Versions 1.7.22 or earlier have a bug that does not delete management users ( `mu-*` ) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

Features included in this release:

- Upgrade to OSS RabbitMQ v3.6.5.
- Erlang 18.1.
- HAProxy v1.6.9.
- Includes stability and bug fixes.
- Fixed an issue with SSL configuration options being applied incorrectly via Ops Manager. Existing customers properties will be migrated and displayed properly

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users ( `mu-*` ) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.3

**Release Date: October 10, 2016**

- Requires stemcell v3263.2.
- This will be a rolling deployment.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.
- Do not upgrade to this version from v1.6.8.

Features included in this release:

- Fixed an issue with SSL configuration options being applied incorrectly via Ops Manager. Existing customers properties will be migrated and displayed properly.
- RabbitMQ v3.6.3.
- Erlang v18.1.
- HAProxy v1.6.4.
- Updates Loggregator to use version `65` which includes etcd

Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users ( `mu-*` ) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.2

**Release Date: September 27, 2016**

- Requires stemcell v3263.2.
- This will be a rolling deployment.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

Features included in this release:

- Using stemcell v3263.2.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.
- RabbitMQ v3.6.3 release is included and the option to enable the event\_exchange plugin is available in Ops Manager.
- Compatibility with all Ops Manager v1.8 features, such as multiple subnets in multiple Availability Zones (AWS, vSphere).
- If deploying this tile as part of an Ops Manager v1.8 upgrade from Ops Manager v1.7, ensure that you are upgrading from RabbitMQ for PCF v1.6.6 or later.
- This release is using Service Metrics v1.4.3.

#### Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.7.0

**Release Date: September 2, 2016**

- Requires stemcell v3262.9.
- This will be a rolling deployment.
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.

#### Features included in this release:

- Using stemcell v3262.9
- This version of the tile can only be installed in an Ops Manager v1.8 (or later) environment.
- RabbitMQ v3.6.3 release is included and the option to enable the event\_exchange plugin is available in Ops Manager.
- Compatibility with all Ops Manager v1.8 features, such as multiple subnets in multiple Availability Zones (AWS, vSphere).
- If deploying this tile as part of an Ops Manager v1.8 upgrade from Ops Manager v1.7, ensure that you are upgrading from RabbitMQ for PCF v1.6.6 or later.
- This release is using Service Metrics v1.4.3.

#### Known Issues:

- Changing networks and/or IP addresses for the `RabbitMQ Server` job results in a failed deployment. For details, see [Changing Network or IP Addresses Results in a Failed Deployment](#).
- Versions 1.7.22 or earlier have a bug that does not delete management users (`mu-*`) when a service is deleted. To automate deletion of these users, contact Pivotal Support.

## v1.6.x

For v1.6.x versions of RabbitMQ for PCF, see the [release notes](#) in the v1.6 version of this documentation.

## 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	2	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.