
3.0 CDN

3.0 OnApp CDN Activation and Setup Guide

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3.0 OnApp CDN Activation and Setup Guide

OnApp CDN is a unique approach to CDN for hosting providers. It's a federated CDN platform that uses spare capacity in OnApp Clouds to provide a global network of low-cost, high-performance CDN PoPs (Point of Presence).

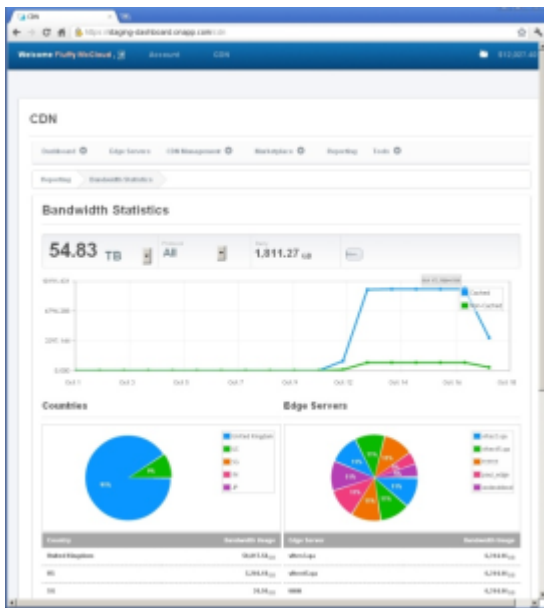
There are three main elements to OnApp CDN:

- **OnApp CDN Stack** – edge server software that installs in your cloud, in much the same way as a virtual machine. This lets you create your own CDN Point of Presence to cache and distribute web content to end users.
- **OnApp CDNaas** – this is an Anycast DNS redirection service that directs content requests from end users to the most appropriate PoP. The service is hosted by OnApp at datacenters around the world.
- **OnApp CDN Federation** – a marketplace where you can buy CDN bandwidth from other hosts using OnApp CDN. This lets you build a global CDN service without having to build global CDN infrastructure. You can also submit your own edge servers to the marketplace and (if your servers are accepted) sell bandwidth to other hosts.

1 The OnApp Dashboard

OnApp CDN is managed in two places:

- **Your OnApp Control Panel** – where you deploy edge servers, manage users and set pricing for your edge server resources.
- **The OnApp Dashboard** – where you manage your CDN account and software licenses, buy bandwidth on the CDN marketplace, set prices for bandwidth you sell on the marketplace, and access reporting and other CDN tools.



Access the Dashboard at <http://dashboard.onapp.com>. You'll need a username and password to log in.

If you don't have login details, or have problems accessing the Dashboard, contact support@onapp.com.

2 How your CDN Account Works

OnApp acts as a clearing house for CDN transactions, handling all payments and charges for the CDN. Your CDN account is managed through the OnApp Dashboard. This is how it works:

<p>You deposit credit in your CDN account.</p>	
<p>You need to deposit at least \$100 to enable OnApp CDN, and you should keep at least \$100 in your account to ensure continuous CDN service. You can add credit and view your account balance at any time through the OnApp Dashboard: http://dashboard.onapp.com.</p>	
<p>OnApp automatically credits your account with revenue you earn from the marketplace.</p>	
<p>If you have edge servers on the CDN marketplace, any revenue you make from them, by selling CDN bandwidth, is automatically added to your account.</p>	
<p>OnApp automatically deducts CDN usage charges from your account, including:</p>	
<p>The cost of any bandwidth you buy on the marketplace: <i>The amount is set by the owners of the marketplace servers you subscribe to.</i></p>	<ul style="list-style-type: none"> • \$x.xx per Gigabyte
<p>The fee for using the core OnApp CDN service (OnApp CDNaaS): <i>This fee applies to all traffic routed to your end users through OnApp CDNaaS, whether it's from your own edge servers or marketplace servers.</i></p>	<ul style="list-style-type: none"> • \$5 per Terabyte of traffic routed via CDNaaS
<p>The fee for selling bandwidth on the OnApp CDN marketplace: <i>This fee is only levied on the value of bandwidth you <u>sell</u> on the OnApp CDN marketplace.</i></p>	<p>10% of the marketplace value of any bandwidth you sell</p>

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If your CDN revenue is greater than your usage costs, OnApp pays you the difference.	
If the value of bandwidth you sell is greater than the cost of the bandwidth you buy + OnApp CDN usage charges, we'll send you a check and deduct that amount from your CDN account balance. The calculation and any payments due are processed monthly. For details on payment withdrawal, contact us at finance@onapp.com .	

3 Hardware & Marketplace Requirements

These are the minimum recommended specs for OnApp CDN controller, edge and storage servers:

OnApp Controller server	Edge servers	SAN
<ul style="list-style-type: none"> • Dual or Quad Core 2Ghz+ CPU • 8GB+ RAM • 100GB RAID 1 • 2x Gig network interface cards 	<ul style="list-style-type: none"> • Quad core 2GHz+ • 4GB+ RAM • 30GB HDD • SSDs are optional, though recommended for optimum IO performance 	<ul style="list-style-type: none"> • Any block storage • SSDs are optional, though recommended for optimum IO performance



OnApp Cloud customers can use their existing controller and hypervisor servers in most cases. Please note, however, that you cannot use OnApp CDN with the free version of OnApp Cloud: you must have a full license.

CDN marketplace requirements

All edge servers submitted to the marketplace are assessed on a case-by-case basis before they are accepted. This helps us to ensure effective CDN performance for hosts and end users. The assessment process includes:

Benchmarking

We benchmark your PoP via SSH. It must meet these minimum requirements:

- Max marketplace price of \$0.05/GB (EU/US) or \$0.20/GB (rest of world)

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- 2 or more edge servers (for redundancy)
- Minimum edge server hardware/network/storage specs:

	HTTP		Streaming	
CPU	Quad Core		Quad Core	
RAM	8GB		8GB	
Disk Space	400 GB	1TB*	1TB	
IOPS	10,000	130*	130	
Sequential Read	45MB/s		45MB/s	
Port speed	N.America/EU	Other	N.America/EU	Other
	1Gbps	100Mbps**	1Gbps	100Mbps**
RAID	None / RAID-0***		None / RAID-0***	
IPs	3 Public IPs		1 Public IP	

Location/existing coverage assessment

Next we consider your PoP's physical location. Our aim is to ensure broad CDN coverage while preventing saturation of edge servers in a given location.

- A PoP in a new location is likely to be accepted as long as it passes the benchmark process.
- In a location with many existing PoPs, your server may not be accepted unless it has unusually good performance characteristics

Benchmark + location = decision!

If your PoP is accepted, it is available immediately on the marketplace.

- If your PoP is not accepted for performance reasons, we'll raise a ticket for resolution with you, and keep it in view for reassessment in the future.
- If location issues prevented your PoP being accepted, we'll keep in view for reassessment in the future

4 OnApp CDN Terms of Use

To use OnApp CDN you must agree and abide by the OnApp CDN Acceptable Use policy, and OnApp CDN General Use Terms and Conditions policy, which you can find here: <http://onapp.com/legal>.

5 Types of CDN Deployment

There are two main ways to get up and running with OnApp CDN. You can build a CDN using your own physical hardware, and add locations from our global CDN marketplace; or you can build a CDN entirely from marketplace resources.

5.1 Build Your CDN with Marketplace Resources Only

This is the simplest way to configure OnApp CDN, since it involves minimal hardware. In essence you're building a virtual CDN. You don't host your own physical edge servers: instead, you subscribe to locations on the OnApp CDN marketplace, purchase CDN bandwidth from other providers, and resell it to your customers. Obviously, without your own edge servers you won't be able to provide local edge resources to your customers, or sell edge server resources on the marketplace.

Basic hardware required:

1x controller server	This hosts the OnApp Control Panel, where you manage your marketplace resources, users, billing and so on.
-----------------------------	------------------------------------------------------------------------------------------------------------

5.2 Combine Your Own Edge Servers with Marketplace Resources

To provision your own local edge server resources you will need to create a small OnApp Cloud. Existing OnApp Cloud users can deploy edge servers in their existing cloud.



Please note that you cannot use OnApp CDN with the free version of OnApp Cloud!

The edge server is a virtual appliance that is deployed and managed in much the same way as a virtual machine. They are hosted on hypervisor(s) and will need their own primary storage volume(s).

Basic hardware required:

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1x controller server	This hosts the OnApp Control Panel, where you manage your local edge servers, marketplace resources, users, billing and so on.
1x hypervisor server	This hosts the edge server virtual appliance and provides its physical CPU and storage resources. Any edge servers you deploy in your cloud can be used by any of your Controller Servers.



At this point it might be a good idea to consider any future cloud plans, as deploying your CDN is basically the same as deploying a small cloud. Check out the [OnApp Cloud v.3.0.x Preparation Guide](#) for more information.

6 Server Installation & Basic Configuration

The first step is to install the relevant control panel and hypervisor (edge server) software for your CDN, and create the basic network, hypervisor and data store setup it needs in the OnApp Control Panel.

There are two fundamental ways to deploy OnApp CDN. You can build a CDN using marketplace resources only, or you can combine marketplace resources with your own physical edge server resources.

6.1 For CDNs Using Marketplace Servers Only

This is the simplest way to deploy OnApp CDN, since it only needs an OnApp Controller Server. You don't host your own edge servers : you build a virtual CDN entirely from marketplace resources.

6.1.1 Controller Server Installation

1. Use SSH to log in to the control panel server as root, and run:

```
bash#> cd ~
bash#> wget http://downloads.repo.onapp.com/install
/cdn_controller_install.sh
bash#> sh cdn_controller_install.sh
```

2. Access the OnApp Web UI on port 80 and enter your license key

Enter your license key, when prompted. It can take up to 10 minutes before your control panel is activated by the OnApp licensing server.

Once your license has been activated, you will have full access to the OnApp Control Panel. Then you can follow the instructions in this document to [activate and configure your CDN](#) .

6.2 For CDNs Combining Local & Marketplace Resources

To create a CDN with local edge servers as well as marketplace resources, you need an OnApp Controller Server and at least one hypervisor to host the edge server virtual appliance included with OnApp CDN.

6.2.1 Controller Server Installation.

1. Use SSH to login to the control panel server as root, and run:

```
bash#> cd ~
bash#> wget http://downloads.repo.onapp.com/install
/cdn_controller_install.sh
bash#> sh cdn_controller_install.sh
```

2. Access the OnApp WebUI on port 80:

You will need to enter your license key. Once entered, it can take up to 10 minutes before your control panel is activated by the OnApp license server.

Once your license has been activated, you will have full access to the OnApp Control Panel.

6.2.2 Hypervisor Installation

1. Access the hypervisor via SSH as root, and run:


```
bash#> cd ~
bash#> wget http://downloads.repo.onapp.com/install/hvinstall.
sh
bash#> sh hvinstall.sh
```



Make a note of the memory overhead value that's output from this script – you'll need this when you add the hypervisor to the control panel.

2. Configure the hypervisor and add it to OnApp Control Panel:

```
bash#> /onapp/onapp-hv-install/onapp-hv-config.sh -h  
<CP_HOST_IP> -f <CP_HOST_IP>  
bash#> shutdown -r now
```

 <CP_HOST_IP> is the management IP address of the Control Panel server.

When the hypervisor reboots, it will become available to the Control Panel server, so you can proceed to the next steps.

6.2.3 Configure SSH Keys

When you have finished the hypervisor and control panel installations, you must configure the relevant SSH keys on the servers to allow access across your infrastructure.

Make sure you have your CP & HV root passwords to hand, as you will need to enter them into this script in a timely fashion.

 You **must** login to the Control Panel server **as root** to run this script!

```
bash#> cd ~  
bash#> wget http://downloads.repo.onapp.com/install-all-keys.sh  
bash#> sh install-all-keys.sh
```

6.2.4 Create Hypervisors and Hypervisor Zones

1. Create a new hypervisor zone:

- Go to your Control Panel's **Settings** menu and click the **Hypervisor Zones** icon.
- Click the **Add New Hypervisor Zone** button.
- On the screen that follows, give your hypervisor zone a name (label).
- Make sure that the *disable failover* option is selected.
- Click the **Save** button to finish.

2. Add your new hypervisor to the control panel:

- Go to your Control Panel's **Settings** menu and click the **Hypervisors** icon.

- Press "+" button or click the **Add a New Hypervisor** button underneath the list of Hypervisors on the screen.
 - On the screen that appears:
 - Enter a hypervisor label.
 - Add an IP address.
 - Add a backup IP address.
 - Choose a hypervisor type (Xen, KVM or VMware).
 - Move the slide to the right to enable a hypervisor. Hypervisors that are not enabled cannot be used to host VMs.
 - Move the slider to the right to collect statistics for this hypervisor.
 - Move the slider to the right to disable failover on this hypervisor (failover is automatic VM migration to another hypervisor if this one goes down).
 - Click the **Save** button to finish. The hypervisor will be added to the system. You can view the hypervisor under the main **Hypervisors** menu.
3. Add that hypervisor to your new hypervisor zone:
- Go to your Control Panel's **Settings** menu and click the **Hypervisor Zones** icon.
 - Click the label of the zone you want to add a hypervisor to.
 - The screen that appears will show you all hypervisors in the cloud, organized into two lists – those assigned to the zone already, and those that are unassigned.
 - In the unassigned list, find the hypervisor you want to add to the zone, and click the **Add** icon next to it.

6.2.5 Create Networks and Network Zones

1. Create a new network zone

- Go to your Control Panel's **Settings** menu and click the **Network zones** icon.
- Click the **Add New Network zone** button.
- On the screen that follows, give your network zone a name (label) and then click the **Save** button.

2. Create a new network

- Go to your Control Panel's **Settings** menu and click the **Networks** icon.
- Click the **Add New Network** button at the end of the list.

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- On the screen that follows, give the new network a name (label), a VLAN number, and assign it to a network zone if required.
- Click the **Add Network** button to finish.



The network label is simply your choice of a human-readable name – "public", "external", "1Gb", "10Gb" etc.



The VLAN field only needs to be given a value if you are tagging the IP addresses you will add to this network with a VLAN ID (IEEE 802.1Q). If you plan to tag IP addresses in this way, you need to make sure the link to the public interface on the hypervisors is a trunked network port. If you are not VLAN tagging addresses, this field can be left blank and the public port on the hypervisor can be an access port.

3. Add that network to your new network zone.

- Go to your Control Panel's **Settings** menu and click the **Network Zones** icon.
- Click the label of the zone you want to add a network to.
- The screen that appears will show you all networks in the cloud, organized into two lists – those assigned to the zone already, and those that are unassigned.
- In the unassigned list, find the network you want to add to the zone, and click the **Add** icon next to it.

4. Add a range of IP addresses to the new network

- Go to your Control Panel's **Settings** menu.
- Click the **Networks** icon: the screen that appears shows every network available in your cloud.
- Click the name (label) of the network you want to add addresses to. On the screen that follows you'll see a list of all IP addresses currently assigned to this network.
- Click the **Add New IP Address** button at the bottom of the screen, and complete the form that appears:
 - *IP Address* – add a range of addresses. For example:

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- '192.168.0.2-254' or '192.168.0.2-192.168.0.254' (IPv4) '2001:db8:8:800:200C:417A-427A' (IPv6).
- *Netmask* – for example: '255.255.255.0' (IPv4) or '24' (IPv6).
- *Gateway* – enter a single IP to specify a gateway. If you leave this blank the address will be added without a gateway.
- *Don't use as primary during VM build* – If you tick this box, the IP addresses you add will never be assigned as primary IPs. Primary IPs are only allocated to VMs when the VM is built, so with this box ticked, the address range will never be assigned to a newly built VM.
- Click the **Add New IP Address** button to finish.



You can add up to 1,000 IP addresses at once. To add more than 1,000 addresses, repeat the procedure again.

6.2.6 Create Data Stores & Data Store Zones

Use this information to set up data stores based on traditional/centralized storage.

1. Create a new data store zone:

- a. Go to your Control Panel's **Settings** menu and click the **Data store zones** icon.
- b. Click the **Add New Data store zone** button.
- c. On the screen that follows, give your data store zone a name (label) and then click the **Save** button.

2. Create a new data store

To create an LVM data store:

- a. Go to your Control Panel **Settings** menu.
- b. Click the **Data Stores** icon.
- c. Click the **Create Data Store** link at the bottom of the screen.
- d. Follow the steps in the creation wizard:

Step 1 of 2

- Enter a label and IP address for your data store.

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- Move the slider to the right to enable a data store. When disabled, OnApp will not allow new disks to be created automatically on that data store. This is useful to prevent an established data store from becoming too full. It also lets you prevent the automatic creation of root disks on 'special' data stores (high speed, etc).
- Click **Next**.

Step 2

- Set disk capacity in GB.
 - If required, you can also bind the data store with a local hypervisor. This is helpful if you wish that the data store and a hypervisor were located on the same physical server thus decreasing the time needed for a hypervisor-data store connection.
 - If required, you can also assign the data store to a data store zone. The drop-down menu lists all data store zones set up in the cloud (to add or edit data store zones, see the section on Data store zones in the Settings section of this guide)
 - Select the *lvm* data store type.
- e. When you've finished configuring the store, click the **Create Data Store** button.

To create a SolidFire data store:

- a. Go to your Control Panel **Settings** menu.
- b. Click the **Data Stores** icon.
- c. Click the **Create Data Store** link at the bottom of the screen.
- d. Follow the steps in the creation wizard:

Step 1 of 3

- Enter a data store label.
- Specify an IP address to be used for managing the data store via CP (Inasmuch SolidFire data stores have two interfaces, you'll have to specify the IP address for the cluster admin later.)
- Select a *solidfire* data store type.

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- Move the slider to the right to enable a data store. When disabled, OnApp will not allow new disks to be created automatically on that data store. This is useful to prevent an established data store from becoming too full. It also lets you prevent the automatic creation of root disks on 'special' data stores (high speed, etc).
- Click **Next**.

Step 2 of 3

- Set disk capacity in GB.
- If required, you can also bind the data store with a local hypervisor. This is helpful if you wish that the data store and a hypervisor were located on the same physical server thus decreasing the time needed for a hypervisor-data store connection.
- If required, you can also assign the data store to a data store zone. The drop-down menu lists all data store zones set up in the cloud (to add or edit data store zones, see the section on Data store zones in the Settings section of this guide).

Step 3

- Specify the Cluster Admin settings:
 - iSCSI IP* - iSCSI IP address
 - Username* - specify username for cluster authorization
 - Password* - specify password for cluster authorization
- Specify the Solid Fire Account settings:
 - Username* - specify SolidFire account username
 - Initiator secret* - specify iSCSI initiator secret (optional)
 - Target secret* - specify iSCSI initiator secret (optional)

Initiator secret and *target secret* are optional parameters. They are created automatically for a newly created account. For the new account they will be taken from the SolidFire database.

If you specify target and initiator secrets for an existing user, they will be overwritten.

e. When you've finished configuring the store, click the **Create Data Store** button.

To create a VMware data store:

- a. Go to your Control Panel **Settings** menu.
- b. Click the **Data Stores** icon.
- c. Click the **Create Data Store** link at the bottom of the screen.
- d. Follow the steps in the creation wizard:

Step 1 of 2

- Enter a label of the vCenter data store. The label of VMware data store must match the vCenter data store label!
- Leave the IP address field empty.
- Move the slider to the right to enable a data store. When disabled, OnApp will not allow new disks to be created automatically on that data store. This is useful to prevent an established data store from becoming too full. It also lets you prevent the automatic creation of root disks on 'special' data stores (high speed, etc).
- Click *Next*.

Step 2

- Set disk capacity in GB.
 - If required, you can also bind the data store with a local hypervisor. This is helpful if you wish that the data store and a hypervisor were located on the same physical server thus decreasing the time needed for a hypervisor-data store connection.
 - If required, you can also assign the data store to a data store zone. The drop-down menu lists all data store zones set up in the cloud (to add or edit data store zones, see the section on Data store zones in the Settings section of this guide)
 - Select the *vmware* data store type.
- When you've finished configuring the store, click the **Create Data Store** button.



Follow these steps for each local storage block on the hypervisor.

- Configure the data store on your hypervisor



The commands below use `/dev/sda5` as an example. You can find the volume group identifier we're using in the second command, from the DataStores screen in the Control Panel.

```
bash#> pvcreate --metadatasize=50M /dev/sda5
bash#> vgcreate onapp-ar0akk2wyer3tf /dev/sda5
```

- Update necessary sysctl variables and reload.

Edit your `/etc/sysctl.conf` file. If the `netfilter.ip_conntrack_max` entry exists, update the value: if it doesn't exist, add it. You can increase the `netfilter.ip_conntrack_max` value if required.

```
net.ipv4.netfilter.ip_conntrack_max = 256000
bash#> sysctl -p
```

6.2.7 Join Networks and Datastores to Hypervisors

1. Join datastores to hypervisors:

- a. Go to your Control Panel's **Settings** menu and click the **Hypervisors** icon.
- b. Click the label of the hypervisor you want to manage data stores for.
- c. On the screen that appears, click the **Manage Data Stores** link in the **Actions** section.
- d. On the screen that follows, you'll see a list of all data stores currently associated with this hypervisor:
 - To add a data store join, choose a data store from the drop-down menu and click the **Add Data Store** button.
 - To remove a data store join, click the **Delete** icon next to it. You'll be asked for confirmation before the store is removed.

2. Join networks to hypervisors:

- a. Go to your Control Panel's **Settings** menu and click the **Hypervisors** icon.
- b. Click the label of the hypervisor you want to manage networks for.
- c. On the screen that appears, click the **Manage Networks** link in the **Actions** section.
- d. On the screen that follows, you'll see a list of all networks currently associated with this hypervisor:
 - To add a new network join, choose a network from the drop-down menu, enter its interface name (`eth0`, `eth1`) and click the **Add Network** button.
 - To remove a network join, click the **Delete** icon next to it. You'll be asked for confirmation before the network is removed.



Note that when you join the network to a hypervisor you must specify the relevant NIC: this should be a dedicated NIC with a blank config that is patched to route the network in question.

6.2.8 Download and Configure Templates



This configuration should be applied in case you are not using the new backup server scheme.

1. Go to your Control Panel's **Settings** menu, click the **Configuration** icon, then choose **Backups/Templates**. On the screen that follows:
 - a. Enable the **Use SSH File Transfer** option.
 - b. The Server IP should be the management IP address of your Control Panel server.
 - c. Set the user to root and leave the other options default.
2. Login to the OnApp Control Panel server as root, and run:

```
bash# wget http://rpm.repo.onapp.com/repo/centos/5/onapp-repo.noarch.rpm
bash# rpm -Uvh onapp-repo.noarch.rpm
bash# yum install onapp-bk-install
bash# sh /onapp/onapp-bk-install/onapp-bk-install.sh -t
```



PLEASE NOTE: Before creating a virtual machine, you must create at least one template group in the template store with the required templates. See [Template Store](#) section of the Admin guide for details.

7 CDN Activation & Set-Up Process

Activating and setting up your CDN is a fairly straightforward process. There are five main steps:

1. [Enable CDN for Your Cloud.](#)
2. [Enable customer and admin permissions for CDN.](#)
3. [Create your own edge servers and/or subscribe to edge locations on the CDN marketplace.](#)
4. [Create you own CDN storage servers.](#)
5. [Create CDN Edge Groups and assign edges to them.](#)
6. [Assign CDN Edge Groups to a billing plan, and set prices for CDN bandwidth.](#)

Each step is explained in the following sections.

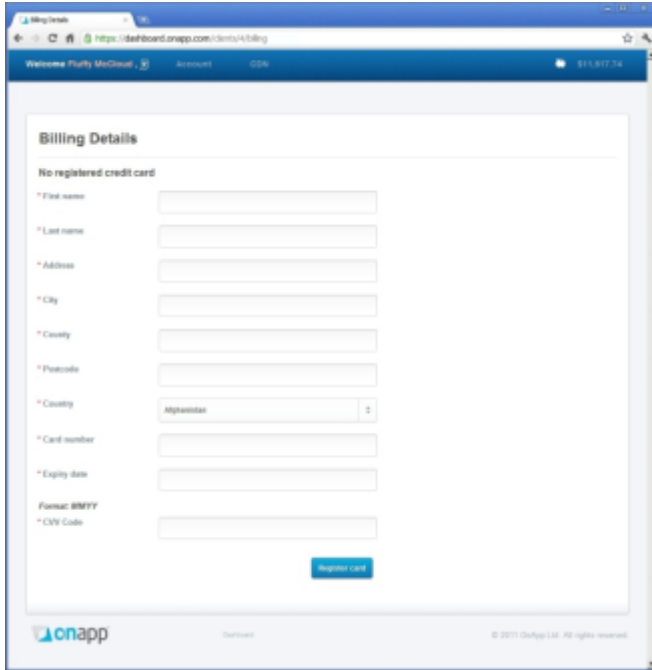
7.1 Enable CDN for Your Cloud

1. Log in to the OnApp Dashboard: <http://dashboard.onapp.com>
If you have problems logging in, contact support@onapp.com.



2. Add a credit card to your account.
Go to **Account -> Billing** details. This screen enables you to manage and view credit cards associated with your account.
Complete the form and click the **Register Card** button to add a credit card to your account.

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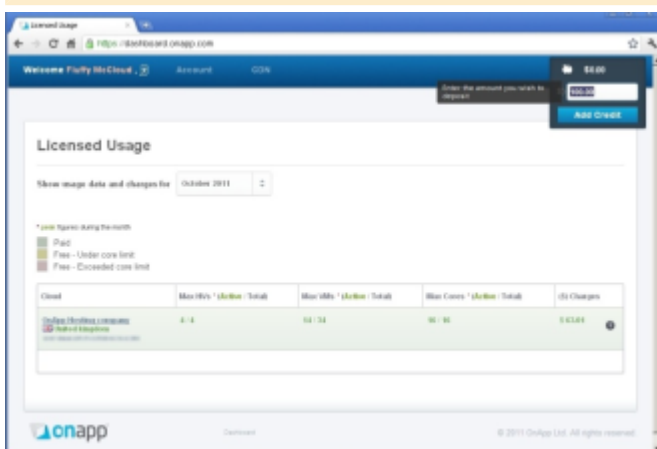
3. Add at least \$100 to your CDN account.

Hover over your account balance in the top-right corner of the Dashboard. A pop-up window will appear, where you can enter an amount and click the **Add Credit** button. You need at least \$100 in your account to enable CDN.

If credit was added successfully, you'll see a "Card successfully charged" message. If there was a problem adding credit, you'll see an error message and a form where you can try adding credit again.

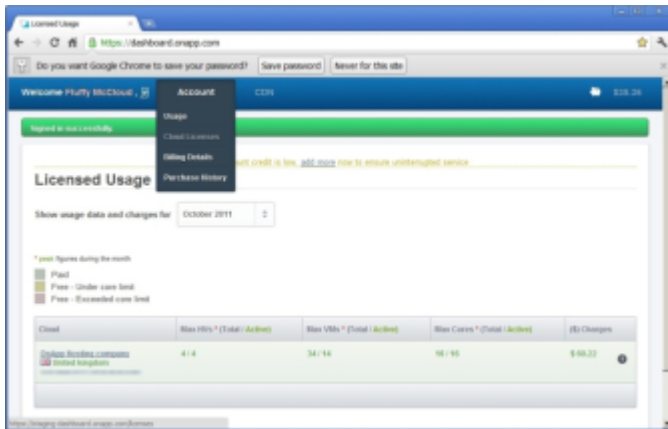


You can also click the icon/balance at the top of the pop-up window to visit the Add Credit screen, which will provide additional guidance for the amount you need to add.



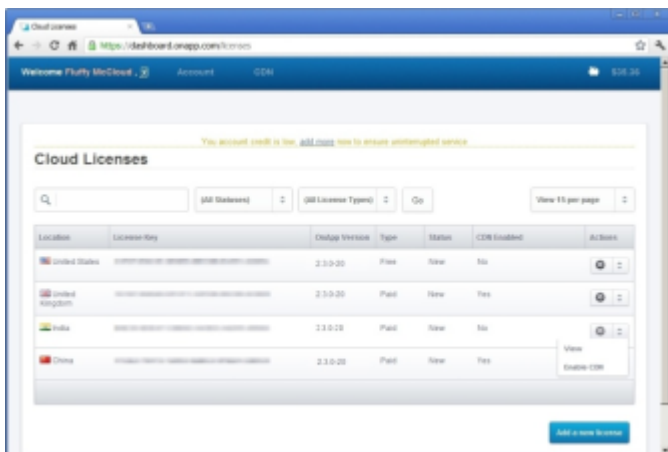
4. Go to **Account -> Cloud Licenses**.

On the Cloud Licenses screen you'll see a list of all your OnApp clouds with their license key, location and other details.



5. Open the **Settings** dialogue and enable CDN.

On the Cloud Licenses screen, click the **Settings** button  next to the cloud you want to enable for CDN. You'll see a pop-up menu appear: click **Enable CDN**.



6. Enter the location of the cloud you want to enable for CDN.

After you click **Enable CDN** you'll be taken to a screen where you enter location details for your CDN-enabled cloud.

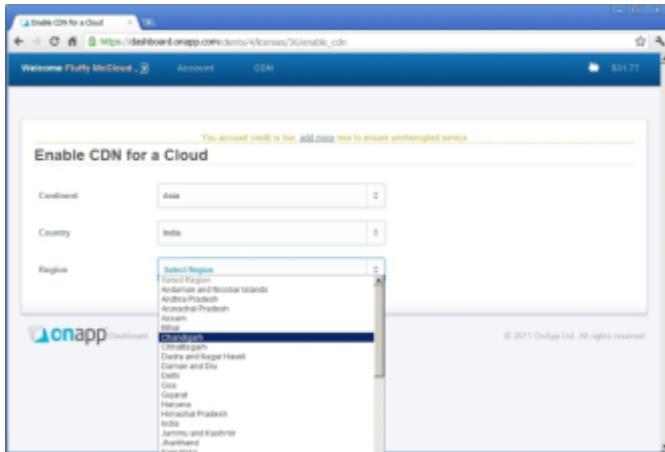
Select the continent, country, region and city your cloud is in. Each field appears after you've completed the previous one.

These details will be used to describe any edge servers you submit to the CDN marketplace, and to assist other marketplace users searching for CDN resources by location.



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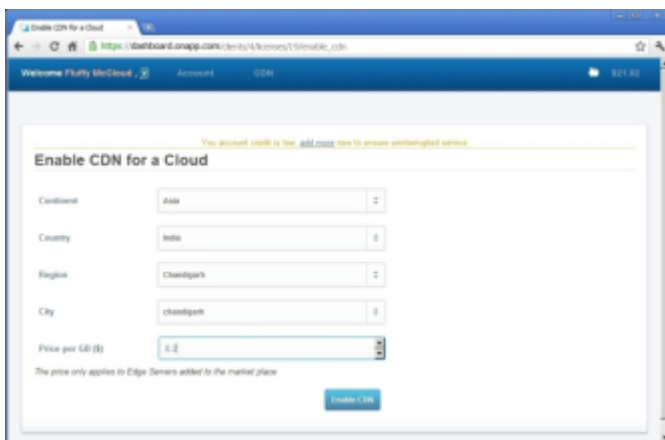
The CDN marketplace allows you to subscribe to CDN locations provided by other hosts. It also enables you to sell CDN bandwidth from your own edge servers to other hosts. Please note that all servers submitted to the marketplace, in order to sell bandwidth, are assessed before they are accepted. Criteria include geographic location, bandwidth and server specs.



7. Enter a price for bandwidth.

When you have completed the location fields, you'll be able to enter a price for bandwidth. The bandwidth price in the Dashboard is only used for edge servers you submit and have accepted into the CDN marketplace – it's the price of bandwidth you sell on the marketplace.

Setting prices for edge server resources you sell to end users (rather than other marketplace members) is handled through the OnApp control panel, via CDN Edge Groups and Billing Groups. This part of the process is explained later in this document.



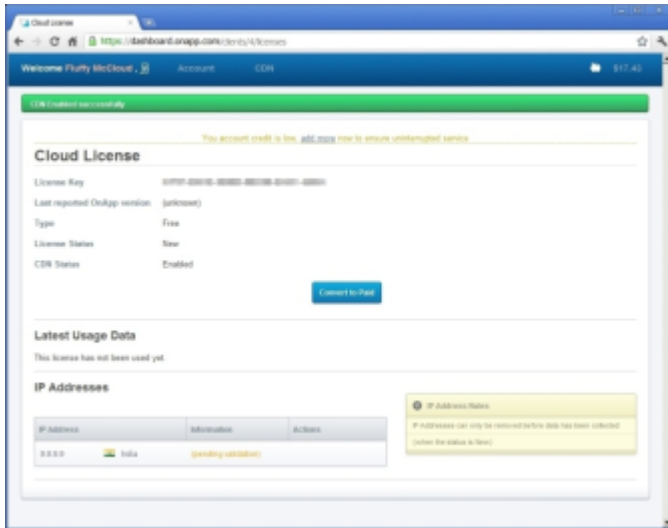
8. Confirm the CDN activation.

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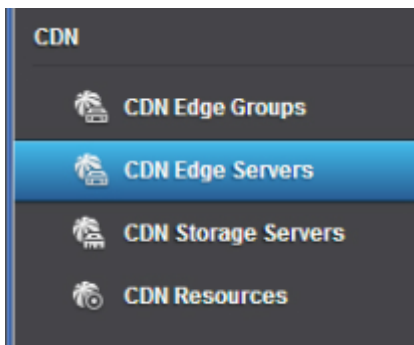
Once your location and pricing details are complete, click the **Enable CDN** button to confirm.

If successful you'll see a "CDN enabled successfully" message.

You'll also see details of your updated cloud license, usage data, and the IP address and status of your cloud.



Once you have completed the CDN setup process, you will see new CDN tools in the main left-hand navigation of your OnApp Control Panel.

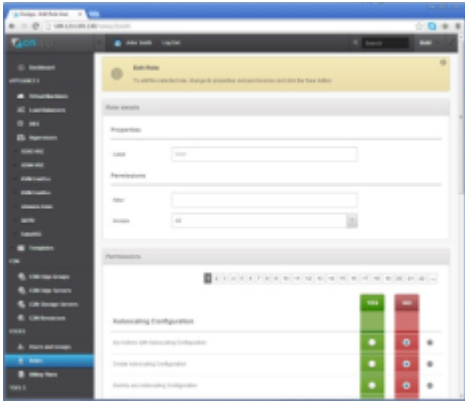


7.2 Set Customer and Admin Permissions for Your CDN.

You must set correct CDN permissions for your customers and administrators in your OnApp Control Panel – otherwise users won't be able to purchase bandwidth or manage CDN resources.

Customer/end user roles

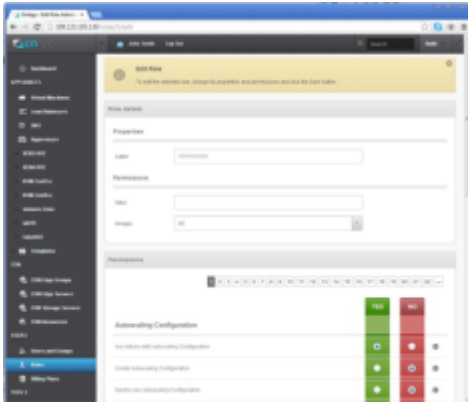
1. Go to your control panel **Roles** menu.
2. To edit a customer/end user role, click the **Actions** button next to the role you want to change, then click **Edit**.



3. Select **CDN Resources** in the permissions list and enable the following permissions:
 - Create a new CDN resource (cdn_resources.create)
 - Destroy own CDN resources (cdn_resources.delete.own)
 - See own CDN resources (cdn_resources.read.own)
 - Update own CDN resources (cdn_resources.update.own)
4. Click the **Save** button.

Administrator roles

1. Open your OnApp Control Panel. Go to the **Users and Groups** screen, and click the **Roles** tab.
2. To edit an administrator role, click the **Actions** button next to the role you want to change, then click **Edit**.



3. Enable the following permissions:

- *CDN Resources*
Any action on CDN resources
- *Edge Groups*
Any action on Edge Groups
- *Edge Servers*
Any action on Edge Servers

4. Click the **Save** button.

7.3 CDN Setup Wizard

The setup cycle consists of 3 steps:

- Permissions
- CDN edge groups
- Billing

To start the CDN wizard:

1. Go to your Control Panel's **CDN Edge Servers** menu.
2. Click the **Start Wizard** button to begin the CDN setup wizard.
3. Proceed the steps in wizard, as described below.

Step 1 of 3. Permissions

- Set the CDN permissions for the user role to enable CDN for your clients. Select a Client role from the drop-down list to enable the required permissions. You can enable CDN permissions for additional groups later via **Users and Groups** menu.

- Enable CDN resources permissions for the Administrator role. In case you have multiple roles assigned to your account, select the role from the drop-down list.



Be careful not to assign Administrator role to a Client shared role. You may skip the permissions section if you have set permissions before. PLEASE NOTE: users will not be able to purchase and manage their CDN resources unless they are enabled for their ROLE.

Step 2 of 3. CDN edge groups

- Give your edge group a unique label. For example, you can create an Edge group called "North America" and add to it your North American POPs. You will be able to define additional groups later under the **Users and Groups** menu.
- Choose the available locations from the **Available Locations** list. To add a location, click the '+' button next to the location you wish to add to the group.

Step 3 of 3. Billing

- Assign the CDN edge group to the billing plan from the drop-down list.



NOTE: You can't add two edge groups with the same location to one billing plan.

- Specify the price per GB of CDN usage (traffic used by your clients on the locations within the edge group). You will be able to assign additional edge groups with different prices to the selected billing plan later, using a **Users and Groups** menu.



PLEASE NOTE: Any customer assigned to the selected billing plan will be able to create a CDN service, powered by the Edge Group locations at the defined price.

- After you have finished configuring the CDN edge group properties, click the **CDN Dashboard** button to head back to the Dashboard or click **Finish** button to quit the CDN setup wizard.



User should have the following permissions enabled to run the CDN setup wizard:

- Update any Role
- See all Roles
- Create a new edge group

7.4 Create or Subscribe to CDN Edge Servers.

Your CDN needs edge servers to cache and deliver content. You can set up your own edge servers in your cloud, subscribe to edge servers on the CDN marketplace, or do both.

- [Add CDN Edge Server to Your Cloud](#)
- [Subscribe to CDN Marketplace Locations](#)

7.4.1 Add CDN Edge Server to Your Cloud

To add a CDN edge server to the cloud:

1. Go to your Control Panel's **CDN Edge Servers** menu.
2. On the screen that appears, click the **Create Edge Server** button or press the "+" button.
3. Fill in the edge server creation form step by step:

Step 1 of 3

- Give your edge server a label. The label can consist of:

Lower- & upper-case letters [A-Za-z]

Digits [0-9]

Dash [-]

Underscore [_]

Space character []

At sign [@]

Brackets [() { }]

Slashes [/]

Caret [^]

Dollar sign [\$]

Asterisk [*]

Comma [,]

Dot [.]


- Select an edge server type: HTTP or streaming




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A third party application - Wowza will be installed automatically when installing a streaming edge server and additional charges will apply. Please, contact your account manager for details.


- Choose a hypervisor zone to build this server on.
- Choose a specific hypervisor to build this server on.
- Move the **Add to Marketplace** slider to the right to submit this server to the OnApp CDN marketplace.
- Click **Next**.

 Any servers you submit will be assessed before they are accepted into the marketplace. Criteria include geographic location, bandwidth and server specs.

 **NOTE:** If the Add to Marketplace checkbox is ticked, the minimum required disk size is 1 TB.

Step 2 of 3

- Set the resources needed for this edge server: RAM, CPU cores and CPU priority.
- Choose a data store zone for this edge server's primary disk.
- Set the primary disk size.

 The disk size is calculated in the following way: 10 GB for OS, the rest of total disk space is estimated 80% per Pull population and 20% per Push population.

- Choose a network zone and set the port speed for this edge server, or make it unlimited.

Step 3

- Move the **Build Edge Server Automatically** slider to the right if you want the system to automatically build the edge server. Otherwise, you will have to build your server manually after it is created.

4. Click **Create Edge Server**.



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Open all available ports to the CDN edge server if you are using firewall rules, since edge servers do not support the firewall configuration.



Edge servers are managed in much the same way as a virtual machine. The exception is that autoscaling, backups, NAT and firewall rules are not available for edge servers. For a full description of edge server management tools, see the CDN sections of the OnApp Cloud Administration Guide .

7.4.2 Subscribe to CDN Marketplace Locations

To subscribe to a CDN marketplace location:

1. Log in to the OnApp Dashboard: <http://dashboard.onapp.com>

The screenshot shows the OnApp CDN Marketplace interface. At the top, there is a navigation bar with tabs: Dashboard, Edge Servers, CDN Management, Marketplace, Reporting, and Tools. Below this, there is a sub-navigation bar with 'Marketplace' and 'Subscribe PoPs'. The main content area is titled 'Marketplace' and features three tabs: 'Locations', 'Provider', and 'Price'. A map of the world is displayed, with a tooltip for 'Bangor, United Kingdom' showing 'OnApp - \$ 10/GB - Subscribed'. Below the map, there is a note: 'Note: Streaming PoPs are only available for Cloud CP v3 Beta. They are not available for Cloud v2.x.' Below the note, there are tabs for 'North America', 'South America', 'Europe', 'Africa', 'Asia', and 'Oceania'. The 'North America' tab is selected, and a table of providers for 'Dallas, United States' is shown. The table has columns for 'Provider', 'Stream', 'HTTP', 'Price/GB', and 'Purchase'.

Provider	Stream	HTTP	Price/GB	Purchase
WK Client ?	No	Yes	\$ 0.080	<input checked="" type="checkbox"/>

Below the table, the text 'Alameda, United States' is visible.

2. Click the **CDN** link in the main Dashboard navigation.
3. Select the **Marketplace** tab on the main CDN dashboard screen, then choose **Subscribe POPs**.
4. Use **Locations**, **Provider** and **Price** tabs above the map to search available edge servers by location/provider/price.
5. In each case, the providers are shown in a list along with their details and price per GB. Choose one or more providers by checking the **Purchase** box next to their entry in the list.
6. Click the **OK** button at the bottom of the screen to confirm.

7.5 Create CDN Storage Servers

Step 1 of 3. Properties

Specify the storage server details:

- Specify the server's label in a human-recognizable format.
- Select the storage server type: HTTP or Streaming.



A third party application - Wowza will be installed automatically when installing a streaming storage server and additional charges will apply. Please, contact your account manager for details.

- **Location** - choose the location group to assign this storage server to.
- Specify the hypervisor and hypervisor zone.
- Click **Next**.

Step 2 of 3. Resources

- Set the resources needed for this storage server: RAM, CPU cores and CPU priority.



The minimum memory capacity is 8 GB.

- Choose a data store zone for this storage server's primary disk
- Set the primary disk size (Storage server HDD). The minimum required disk size is 30 GB.
- Choose a network zone from the drop-down box.
- If the option is available, you can also assign an IP address for the VS from the drop-down menu. Indicate hypervisor and network to have the list of available IPs. Tick the **Show Only My IP Addresses** checkbox to view only own IP addresses in the IP addresses dropbox.
- Set the port speed in Mbps or tick it as unlimited.
- Click **Next**.

Step 3. Confirmation

- On the screen that appears, tick the **Build Edge Server automatically** box to build the storage server automatically, otherwise you will have to build your storage server manually after it is created.
- Click the **Create Storage Server** button to start the creation process.

7.6 Create CDN Edge Groups and Assign Edge Servers to Them.

Once you have created your own CDN edge servers, and/or subscribed to CDN marketplace locations, you can use your OnApp Control Panel to bundle them into CDN Edge Groups. CDN Edge Groups normally include edge servers in a specific region – North America, for example. They can contain a mix of your own servers and marketplace servers, as required.

To create an edge group and assign edge servers to it:

1. Go to your control panel's **CDN Edge Groups** menu.
2. Click the **Create Edge Group** button.
3. On the screen that appears, give your new group a label and click the **Create Edge Group** button.
4. You will be redirected to a screen where you can assign edge servers ("locations") to the group.
5. On the screen that appears, you'll see the list of locations divided into two sections:
 - *Assigned Locations* (your own edge servers and marketplace locations that are part of this group)
 - *Available Locations* (edge servers and marketplace locations not yet assigned to this group)

Using the + and – icons to add/remove locations to your CDN Edge Group.



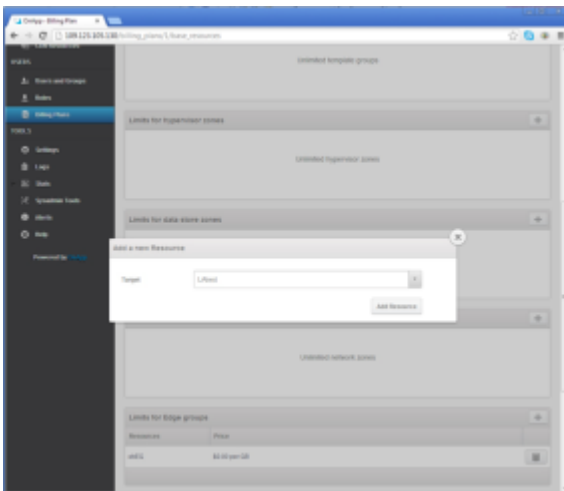
For a full description of CDN Edge Group management tools, see the [CDN](#) section of the OnApp Cloud 3.0 Administration Guide.


7.7 Assign CDN Edge Groups to Billing Plan and Set Prices

The final step is to assign your CDN Edge Group to a billing plan and set prices for bandwidth sold to customers from that edge group.

To assign a CDN Edge Group to a billing plan:


1. Go to your control panel's **Billing Plans** menu.
2. Click the Actions next to a billing plan, then choose **Resources**.
3. Scroll to the **Limits for Edge Groups** section, and click the **+** button.
4. In the pop-up window that appears, choose an edge group from the drop-down list, then click the **Save** button.



 Please note that you can not add two or more edge groups to a billing plan, if those edge groups include the same edge servers.

To set prices for a CDN edge group:

1. Go to the billing plan resources screen (**Billing Plans > Resources**).
2. Click the **+** button in the upper right corner of the limits for edge groups box.
3. In the window that pops up, select the target edge group from the drop-down menu, and click **Save**.
4. Set the prices for the edge group per GB.

 For details, see the [CDN](#) sections of the OnApp Cloud 3.0 Administration Guide.

8 Next Steps

Once you have completed the CDN activation and set-up process, you're ready to start selling CDN services to your customers.

Enabling your customers to distribute content via the CDN is also handled through your OnApp Control Panel, in the **CDN Resources** menu.

The **CDN Resources** menu will appear once you have set up at least one CDN Edge Group, containing at least one edge server or marketplace location, and assigned it to a user's billing plan.

A CDN resource is basically a customer web server that will use the CDN to cache and distribute content.



For details, see the [CDN](#) sections of the OnApp Cloud 3.0 Administration Guide.