OnApp

Cloud v2.3.2

Upgrade Guide

This document details the upgrade process for customers moving from the full version of OnApp Cloud v2.3.1 to v2.3.2.

It explains important changes to the backup system, network config and Windows templates introduced in v2.3.2, the potential impact on your current set-up, and what you need to do to as a result.

It also includes upgrade instructions for your hypervisors and controller servers.

Document version	1.2
Document release date	22nd May 2012
	document revisions

Contents

1. Introduction & important notes

This guide only applies to upgrades from the full version of OnApp Cloud v2.3.1 to v2.3.2. For other upgrade paths, please contact OnApp support.

OnApp Cloud v2.3.2 includes hundreds of new features and improvements, but there are three that you should pay special attention to before beginning your upgrade: the impact on Windows templates, the new backup system, and the new recommended network configuration. These are explained in detail in this document.

Please read the whole of this document before beginning your upgrade, and deal with each section in turn!

ⓘ WHMCS module users: v2.3.1 of our WHMCS module should function normally with v2.3.2 of OnApp Cloud, with the exception of charts, which may not display correctly. This will be fixed in the next release of the WHMCS module.

ⓘ If you're using the free version of OnApp Cloud, this guide does not apply. You'll find upgrade instructions for the free version at http://forum.onapp.com*.*

1.1   Getting support

You can use the information in this document to perform your own upgrade to OnApp Cloud v2.3.2.

However, if you have a full (paid) OnApp Cloud license, you are entitled to free upgrade support from the OnApp Support team.

If you would prefer to have the Support team perform the upgrade for you, just raise a ticket in the normal way. Please be aware, however, that there may be a queue!

2. Windows template changes

After you update your Control Panel server to version 2.3.2, some Windows templates will no longer work – these must be deactivated, and replaced with new templates (version 3.0 or higher). The reason for this is that OnApp Cloud has been redeveloped to use sysprep for Windows templates, and now supports multiple Windows license types for VMs:

- MAK licensing: the default licensing type applied to all Windows-based VMs.
- KMS licensing: for Windows 2008 and Windows 7 VMs only.
- User licenses: end users can input their own license key when creating a VM.

To use this new functionality, current Windows templates must be replaced with new ones. Existing Windows VMs will remain functional, but any new VMs created should use the new 3.x templates.

ⓘ You cannot just delete the old templates. You must deactivate and replace them. You should address template changes before beginning your CP upgrade.

2.1   Impact on custom templates

Certain custom Windows templates, that were created prior to v2.3.2, will not work in the new version unless you take specific actions. The following sections explain what you need to do for Windows templates that may be affected.

ⓘ Procedures in this section MUST be performed in your existing 2.3.1 cloud, BEFORE you upgrade!

2.1.1   Windows 2008 R2 custom templates

These should work correctly.

2.1.2   Windows 2008 custom templates

These will work, but will not assign new SIDs to the VM instance. To change SIDs you have to run sysprep on the target VM in shutdown mode, before taking a new backup of the VM, and converting it into a new template.

WARNING! All custom settings (SID, Computer Name, IP addresses, etc) will be lost as part of this procedure. Take a backup before running sysprep if you want to restore your current VM - or manually configure your custom settings after running sysprep.

- Create your custom sysprep.xml file using Windows Automated Installation Kit
- Login to the target VM via the console
- Copy sysprep.xml to your VM (e. g., c:\ sysprep.xml)
- In the command line run:

```
%SystemRoot%\system32\sysprep\sysprep.exe /generalize /oobe /shutdown
/unattend:C:\sysprep.xml
```

2.1.3   Windows 2003 custom templates

These require a few workarounds:

If you don't need SIDs to be changed in new VMs, you just have to create empty 'sysprep' directory in the system disk root (c:\sysprep) before taking a backup of your VM, and converting the backup to a new template.

If you need SIDs to change, you have to run sysprep on the target VM in shutdown mode, before taking a new backup of the VM, and converting it into a new template.

WARNING! All custom settings (SID, Computer Name, IP addresses, etc) will be lost as part of this procedure. Take a backup before running sysprep if you want to restore your current VM - or manually configure your custom settings after running sysprep.

- Login to the target VM via the console
- Download the relevant file for your template OS (32/64 bit):
  - http://templates.repo.onapp.com/ sysprep_03_x64.zip
  - http://templates.repo.onapp.com/sysprep_03_x86.zip
- Extract all files and directories from it to c:\sysprep
- Go to c:\sysprep and run sysprep.exe
- Click the Reseal button.

2.2 Deactivate old Windows templates

Once you have addressed any issues described in the previous section:

1. **Connect to your Control Panel server using SSH:**

```
ssh root@x.x.x.x
```
(x.x.x.x stands for the server IP)

2. **Go to the directory where OnApp config file is located:**

```
cd /onapp/interface/config
```

3. **Find the database password and name:**

```
cat database.yml
```

4. **Log in as root to your database:**

```
mysql -u root -p [database name]
```

5. **Go to your database:**

```
use [database name];
```

6. **Insert the records:**

```
update templates set state ='inactive' where version is NULL and
operating_system ='windows';
update templates set state ='inactive' where version <3.0 and
operating_system ='windows';
```

2.3   Download the latest Windows templates

- **Go to the OnApp website and select the necessary templates**
  - o Visit http://onapp.com/tmplmgr/
  - o Click the Fetch Links button to generate the files needed for step 2.

1. **Download the sql file to your OnApp control panel server**
   (http://onapp.com/tmplmgr/downloads/1334145477xen_sql.sql is used as an example here)

   Login to your OnApp control panel server and run the following commands:

   ```
   #> cd ~/
   #> wget http://onapp.com/tmplmgr/downloads/1334145477xen_sql.sql
   ```

   At this stage you will need to find your MySQL root password:

   ```
   #> cat /onapp/interface/config/database.yml | grep password |
   head -n1
   ```

   Login to the database using the password returned above and import the sql file:

   ```
   #> mysql -h localhost -u root -p[password] onapp <
   1334145477xen_sql.sql
   ```

2. **Download the template installer and install the templates to the template store**
   You will need to login to the server that holds your templates, this will most likely be your
   backup server or your control panel server.

   ```
   #> cd ~/path/to/templates/directory
   #> wget http://onapp.com/tmplmgr/downloads/1334145477xen_get.sh
   ```

   #> sh 1334145477xen_get.sh

ⓘ This step could take some time, so we recommend you run this command in a screen if possible.

3. Control Panel server upgrade instructions

1. **Make sure your OS is up to date:**

   ```
   bash#> yum --disablerepo=onapp* -y update
   ```

2. **Download the OnApp repository:**

   ```
   bash#> wget http://rpm.repo.onapp.com/repo/centos/5/onapp-
   repo.noarch.rpm
   bash#> rpm -Uvh onapp-repo.noarch.rpm
   bash#> yum clean all
   ```

3. **Upgrade the OnApp Control Panel installer package:**

   ```
   # yum update onapp-cp-install
   ```

4. **Custom Control Panel configuration:**

   ```
   # vi  /onapp/onapp-cp.conf
   ```

   Edit the /onapp/onapp-cp.conf file to set Control Panel custom values, such as:

   - OnApp to MySQL database connection data: connection timeout, pool, encoding, unix socket
   - MySQL server configuration data (if MySQL is running on the same server as the CP): wait timeout, maximum number of connections
   - The maximum number of requests queued to a listen socket (net.core.somaxconn value for sysctl.conf)
   - The root of OnApp database backups directory (temporary directory on the CP box where MySQL backups are placed)

   ⓘ Custom values must be set before the installer script runs.

5. **Run the OnApp Control Panel installer script:**

   ```
   # /onapp/onapp-cp-install/onapp-cp-install.sh
   ```

4. Hypervisor upgrade instructions

1. **Download the OnApp repository**

   ```
   # wget http://rpm.repo.onapp.com/repo/centos/5/onapp-repo.noarch.rpm
   # rpm -Uvh onapp-repo.noarch.rpm
   # yum clean all
   ```

2. **Upgrade OnApp HV installer package:**

   ```
   # yum update onapp-hv-install
   ```

3. **Edit custom Hypervisor configuration**

   Edit the /onapp/onapp-hv.conf file to set hypervisor custom values, such as:

   - NTP time sync server
   - Xen Dom0 memory configuration data
   - Number of loopback interfaces

   # vi /onapp/onapp-hv.conf

   ⓘ Custom values must be set before the installer script runs.

4. **Run the OnApp HV installer script, and keep on eye on the upgrade process:**

   Xen:
   ```
   # /onapp/onapp-hv-install/onapp-hv-xen-install.sh
   ```

   KVM:
   ```
   # /onapp/onapp-hv-install/onapp-hv-kvm-install.sh
   ```

5. Backup changes in v2.3.2

In OnApp 2.3.2 there are two significant changes to the backup scheme and the role of the backup server:

1. You can add multiple backup servers to your cloud.
This gives you flexibility, as it allows you to spread the load over multiple storage nodes, and host backup servers on different networks, and and at different locations, if you wish. You can also add backup zones, which work in the same kind of way as datastore zones and network zones. You can assign clients to specific backup zones, containing specific resources, and bill accordingly.

2. You can run disk operations on the backup server.
You can now run disk operations directly on the backup server, instead of on hypervisors. Taking this workload away from hypervisors increases stability and performance for backup transactions, and your cloud as a whole.

5.1   Switching to the new backup scheme

ⓘ Don't use the new backup scheme if you're using local storage!

After you have updated to OnApp 2.3.2, we recommend that you switch to the new backup scheme when convenient.

To use the new backup functionality you will need to make a small change to your network configuration (this is explained in the following section). Your existing backup system will still work if you don't adopt the new system.

5.2   Server & network requirements

If you decide to use the new backup system there are a couple of requirements you should address before making the switch. Your backup server must be running CentOS 5.x x64, and there is a change required to your network configuration for the new backup functionality to work.

The backup server must be able to see all primary storage volumes which make up the datastores in your cloud. It is very important that all datastores are visible.

The datastores should ideally be presented via the provisioning network, as explained in the network diagram below. This is the optimal way of presenting them. However, if that isn't possible, you can present them via the storage network.

Optimal network configuration for the new backup scheme
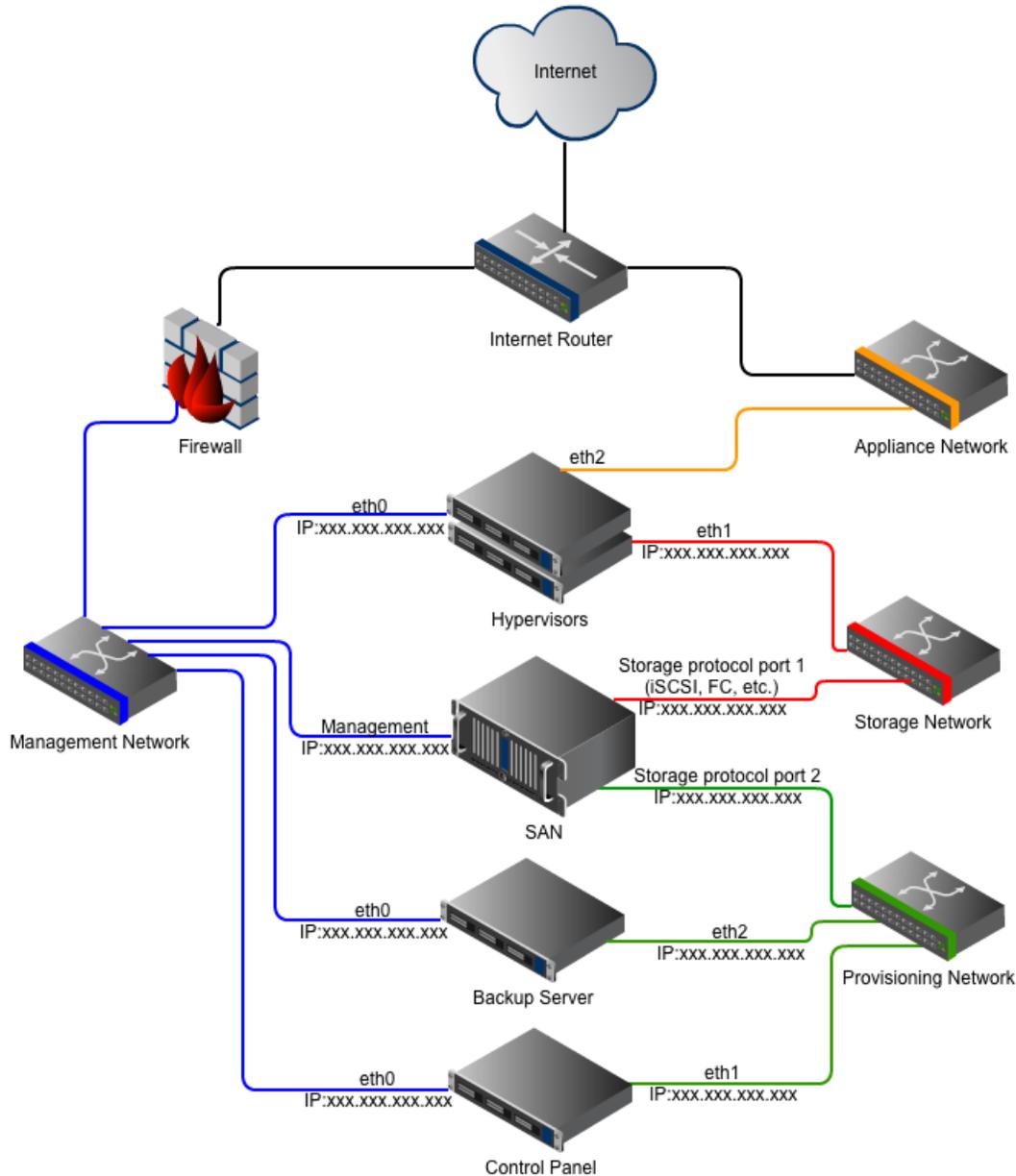
ⓘ Note that the network names have changed in v2.3.2! See the <u>network changes</u> section for more info.

Old name		New name
Public network	->	Appliance network
SAN network	->	Storage network
Backup network	->	Provisioning network
Management network	->	Management network

5.3   How the new scheme affects template storage

You should be aware that introducing the new backup system may affect the way templates are discovered by OnApp.

In the update scenarios described in the next section, you'll notice that in some steps we're fetching an identifier for the backup server from the database (backup_server_id) and then assigning that identifier to each template.

That's because, in the new backup system, if the backup_server_id field in the database is set for a particular template, that's where OnApp will look for the template - so it must exist on that particular backup server.

If the field is set to NULL, then OnApp will default to the legacy backup scheme and use the settings specified in the *Settings --> Configuration --> Backups & Templates* menu of your Control Panel. In this case:

> …if you have specified an IP address, **and** you have *Use SSH File Transfer* enabled, OnApp will fetch the template from that location.

> …if *Use SSH File Transfer* is disabled, OnApp will assume that the templates are either local to each hypervisor, or they are mounted on each hypervisor and the controller server from an external location using NFS.

ⓘ If the backup_server_id field is set for a template, it will always take priority over any configuration in Settings --> Configuration --> Backups & Templates.

5.4   Update scenarios

There are a number of possible update scenarios for clients moving to the new backup scheme in 2.3.2. The pages in this section have instructions for the most common scenarios.

ⓘ How to connect to the OnApp database
The update instructions that follow require you to connect to the OnApp database.

To connect to the database you need to be logged in as root. You can find the password in the production section of the OnApp database configuration file:

```
cat /onapp/interface/config/database.yml
```

Once you have the password you will be able to connect to MySQL from the command line:

```
mysql -h localhost -u root -p[password] onapp
```

13

5.4.1 Already running a backup server with CentOS installed

If you already run a backup server installed with CentOS, and want to move to the new backup scheme:

1. **Do a full system update using yum.**

   ```
   bash#> yum --disablerepo=onapp* -y update
   ```

2. **Install the OnApp repository.**

   ```
   bash#> wget http://rpm.repo.onapp.com/repo/centos/5/onapp-repo.noarch.rpm
   bash#> rpm -Uvh onapp-repo.noarch.rpm
   bash#> yum clean all
   ```

3. **Install the OnApp backup service.**

   ```
   bash#> yum install onapp-backup-tools
   ```

4. **Add the backup server to the OnApp WebUI:**

    Settings --> Backup Servers --> Add New Backup Server

   ⓘ *Make sure the backup server is visible in the Control Panel.*

5. **Update the OnApp database to move existing backup records to the new server:**

   ```
   bash#> cd /onapp/interface
   bash#> thor backups:join --address xxx.xxx.xxx.xxx
   ```

6. **Find the identifier of the new backup server and add the identifier to each template entry.**

   ⓘ *Be sure you understand the potential impact on templates (see* this section*) before you continue!*

   Connect to the OnApp database (see here for instructions) and run the following:

   ```
   SELECT id FROM backup_servers where ip_address='xxx.xxx.xxx.xxx';
   UPDATE templates SET backup_server_id='x';
   ```

7. **Make sure all primary storage block devices are visible on the server.**

    If you are using iSCSI SAN(s) you will need to create all sessions.
    You should run a pvscan to make sure all datastore identifiers are visible.

5.4.2 Already running a backup server without CentOS installed

If you already run a backup server (without CentOS) and want to switch to the new backup scheme:

1. **Stop the OnApp service on the Control Panel server.**

   ```
   bash#> service onapp stop
   ```

2. **Reinstall the backup server with a base installation of CentOS 5.8 x64.**

   ⓘ Remember not to format the template/backups partition or disk. If they are stored on the same partition then you will need to take a backup before reloading the server.

3. **Do a full system update using yum.**

   ```
   bash#> yum -y update
   ```

4. **Install the OnApp repository.**

   ```
   bash#> wget http://rpm.repo.onapp.com/repo/centos/5/onapp-
   repo.noarch.rpm
   bash#> rpm -Uvh onapp-repo.noarch.rpm
   bash#> yum clean all
   ```

5. **Install the OnApp backup service.**

   ```
   bash#> yum install onapp-backup-tools
   ```

6. **Add the backup server to the OnApp WebUI:**

   Settings --> Backup Servers --> Add New Backup Server

   ⓘ Make sure the backup server is visible in the Control Panel.

7. **Update the OnApp database to move existing backup records to the new server:**

   ```
   bash#> cd /onapp/interface
   bash#> thor backups:join --address xxx.xxx.xxx.xxx
   ```

8. **Find the identifier of the new backup server and add the identifier to each template entry.**

ⓘ Be sure you understand the potential impact on templates (see this section) before you continue!

   Connect to the OnApp database (see here for instructions) and run the following:

```
SELECT id FROM backup_servers where ip_address='xxx.xxx.xxx.xxx';
UPDATE templates SET backup_server_id='x';
```

9. **Make sure all primary storage block devices are visible on the server.**

 If you are using iSCSI SAN(s) you will need to create all sessions.

You should run a pvscan to make sure all datastore identifiers are visible.

10. **Start the OnApp service on the Control Panel server.**

```
bash#> service onapp start
```

5.4.3 Running backups on the CP, adding new backup server

If you currently run backups/templates on your control panel server, and want to add a dedicated backup server:

1. **Install the backup server with a base installation of CentOS 5.8 x64 and do a full system update using yum.**

   ```
   bash#> yum -y update
   ```

2. **Install the OnApp repository.**

   ```
   bash#> wget http://rpm.repo.onapp.com/repo/centos/5/onapp-
   repo.noarch.rpm
   bash#> rpm -Uvh onapp-repo.noarch.rpm
   bash#> yum clean all
   ```

3. **Install the OnApp backup service.**

   ```
   bash#> yum install onapp-backup-tools
   ```

4. **Transfer over the backup and template data from the controller:**

   ```
   bash#> mkdir -p /onapp/templates
   bash#> rsync -avx root@CP:/onapp/templates/ /onapp/templates/
   bash#> mkdir -p /onapp/backups
   bash#> rsync -avx root@CP:/onapp/backups/ /onapp/backups/
   ```

5. **Add the backup server to the OnApp WebUI:**

   Settings --> Backup Servers --> Add New Backup Server

   ⓘ Make sure the backup server is visible in the Control Panel.

6. **Update the OnApp database to move existing backup records to the new server:**

   ```
   bash#> cd /onapp/interface
   bash#> thor backups:join --address xxx.xxx.xxx.xxx
   ```

7. **Find the identifier of the new backup server and add the identifier to each template entry.**

   ⓘ Be sure you understand the potential impact on templates (see this section) before you continue!

   Connect to the OnApp database (see here for instructions) and run the following:

   ```
   SELECT id FROM backup_servers where ip_address='xxx.xxx.xxx.xxx';
   ```

```
UPDATE templates SET backup_server_id='x';
```

8. **Make sure all primary storage block devices are visible on the server.**

   If you are using iSCSI SAN(s) you will need to create all sessions.
You should run a pvscan to make sure all datastore identifiers are visible.

5.4.4 Running backups via NFS, adding backup server mounting this NFS

If you're currently running backups via NFS, and want to deploy a dedicated backup server that will mount this NFS:

1. **Install the backup server with a base installation of CentOS 5.8 x64 and do a full system update using yum.**

   ```
   bash#> yum -y update
   ```

2. **Install the OnApp repository.**

   ```
   bash#> wget http://rpm.repo.onapp.com/repo/centos/5/onapp-
   repo.noarch.rpm
   bash#> rpm -Uvh onapp-repo.noarch.rpm
   bash#> yum clean all
   ```

3. **Install the OnApp backup service.**

   ```
   bash#> yum install onapp-backup-tools
   ```

4. **Mount the backups and templates directories.**

   You will need to mount to /onapp/backups & /onapp/templates

5. **Add the backup server to the OnApp WebUI:**

   Settings --> Backup Servers --> Add New Backup Server

   ⓘ *Make sure the backup server is visible in the Control Panel.*

6. **Update the OnApp database to move existing backup records to the new server:**

   ```
   bash#> cd /onapp/interface
   bash#> thor backups:join --address xxx.xxx.xxx.xxx
   ```

7. **Find the identifier of the new backup server and add the identifier to each template entry.**

   ⓘ *Be sure you understand the potential impact on templates (see* this section*) before you continue!*

   Connect to the OnApp database (see here for instructions) and run the following:

   ```
   SELECT id FROM backup_servers where ip_address='xxx.xxx.xxx.xxx';
   UPDATE templates SET backup_server_id='x';
   ```

19

8. **Make sure all primary storage block devices are visible on the server.**

   If you are using iSCSI SAN(s) you will need to create all sessions.
   You should run a pvscan to make sure all datastore identifiers are visible.

6. Network changes

In OnApp 2.3.2 we have renamed some of the networks used in an install. We have also changed the recommended network configuration, to enhance performance and stability.

6.1 New network naming convention

Network Labels	Description
Appliance	An Internet network to the virtual machines which is protected by a Hypervisor level firewall. Was previously known as the "public network".
Management	The backend management network used throughout OnApp to manage the cloud platform. Was previously known as the "management network", so no change here.
Provisioning	Used for disk related activities, such as VM and backup creation. Was previously known as the "backup network".
Storage	The storage network used by the Hypervisors to communicate with data stores. Was previously known as the "SAN network".
Internet	A non firewalled connection to the Internet, which should be used to Firewalled Virtual Machines on hypervisors , and can be used for the Control Panel if required.

6.2 New network configuration

We recommend that a secondary connection is now taken directly from the SAN into the provisioning network. We consider this to be the optimal configuration for your cloud. The pictures below show the previous and new recommended network configuration.

Existing network configuration

The diagram shows the network configuration for OnApp Cloud versions prior to 2.3.2. Your existing network may not be configured exactly as shown here, but the basic concept should look familiar:
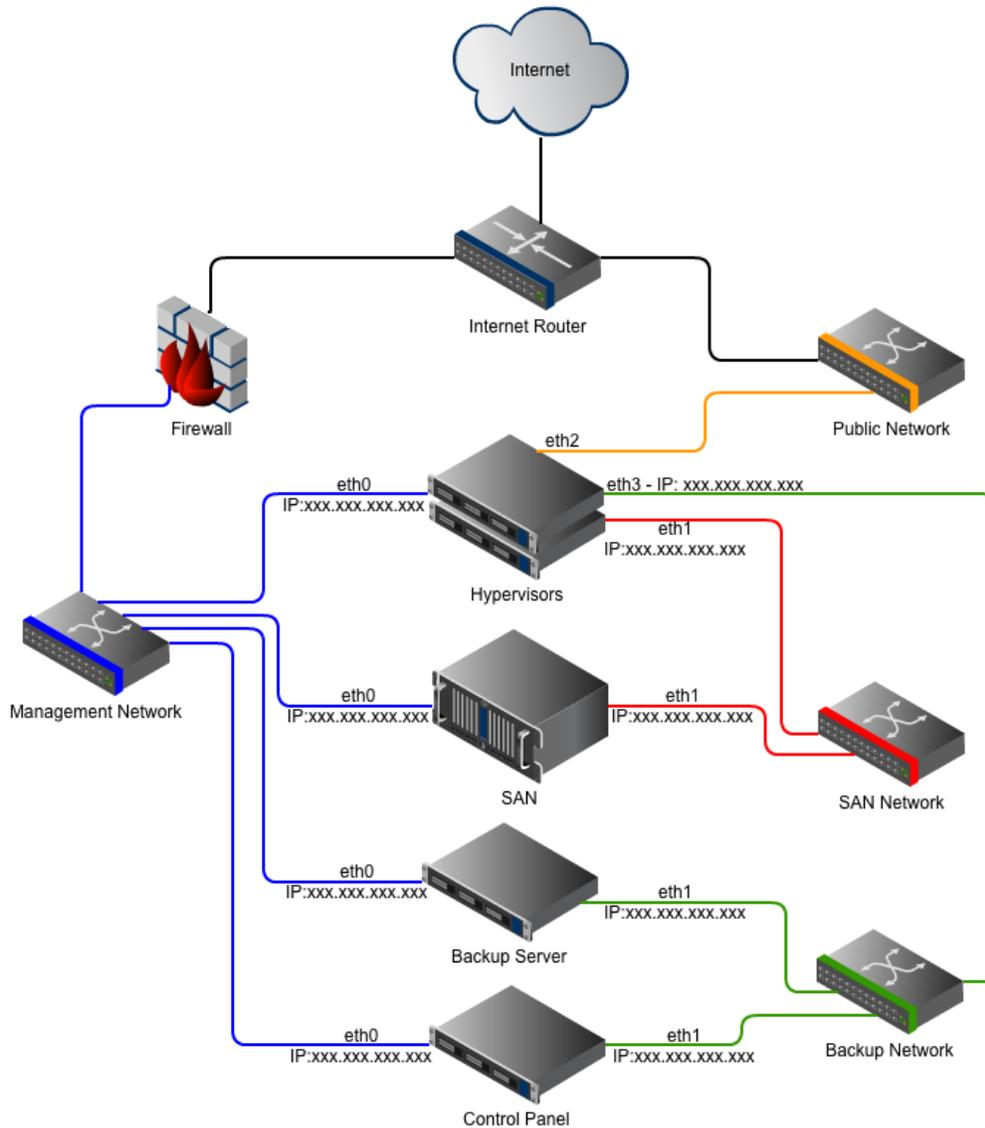
New network configuration

The diagram shows the new optimal network configuration for OnApp Cloud 2.3.2. We now recommended that you take a secondary connection directly from the SAN into the Provisioning Network.
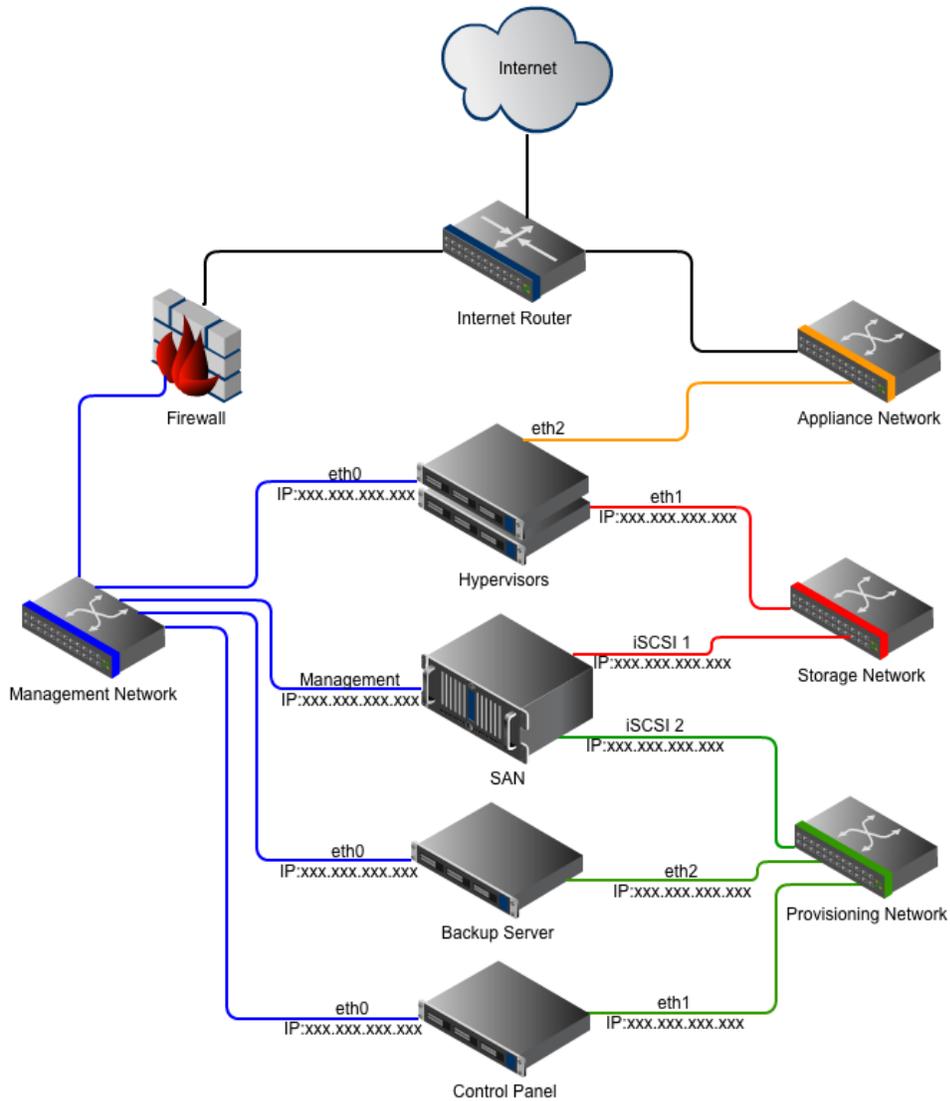
7. Other changes

7.1 Currency precision

v2.3.2 adds a new field to the currency section in your Control Panel's Settings menu (Settings > Currencies).You can now set *Precision* and *Precision per Unit* to specify the number of digits used after the delimiter.

> **Precision** - this parameter is used when showing the costs total for a certain period - e.g. Outstanding amount, Total Cost, Payments.

> **Precision Per Unit** – this is used to display prices for resources , e.g. for CPU, disk size, RAM, IP, data stores, edge servers, disks, backups, templates, etc.

By default, *Precision per Unit* is set to 2. If you have hourly prices set with a larger precision value in your previous version of OnApp, this may cause billing data for VMs to appear blank or to display the incorrect value in the Control Panel and the API, after you upgrade to v2.3.2.

The solution is to edit the *Precision per Unit* value to match your previous level of precision for that currency, after you complete your v2.3.2 upgrade.

Appendix: document revisions

v1.2, 22ⁿᵈ May 2012

- Added currency precision section to explain the potential impact of currency precision changes in v2.3.2, and how to ensure VM billing data are displayed correctly in the UI and API.

v1.1, 18ᵗʰ April 2012

- Added note about WHMCS module status in v2.3.2 to the introduction

v1.0, 17ᵗʰ April 2012

- First release