Implementing SoftNAS Cloud® with Docker®

November 2014

SoftNAS Cloud with Docker provides simple, on-demand, persistent shared storage for DevOps striving to obtain Continuous Delivery/Integration and applications to scale!

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Introduction

Overview

Docker is an open-source project that automates the deployment of applications inside software containers, by providing an additional layer of abstraction and automation of operating system-level virtualization on Linux. Docker enables continuous integration with DevOps finding value through simplicity to build, ship, and run applications within containers. Docker enables separation of concern; developers place applications into containers, operations run the containers. Docker is one of the most active free and open-source projects today, with more than 500 contributors over the last year.

This white paper will help you understand one of the most popular cloud NAS options available for the integration with Docker, the SoftNAS™ Cloud NAS Filer. This document describes how SoftNAS Cloud can be used to provide persistent storage to Docker containers. It will pay particular attention to solving Dockers key storage challenges.

What is NAS?

NAS is a common IT term for Network Attached Storage that enables data and file sharing using popular protocols like NFS and CIFS/SMB. iSCSI is typically associated with SAN (Storage Area Networks). NAS storage systems that support NFS, CIFS/SMB and iSCSI are termed “unified” storage. SoftNAS Cloud provides unified storage designed and optimized for high-performance, higher than normal I/O per second (IOPS) and data reliability and recoverability. It also increases storage efficiency through thin-provisioning, compression and deduplication.

What is SoftNAS™ Cloud?

SoftNAS™ is a Software-defined NAS Filer delivered as a virtual storage appliance that runs within popular public cloud environments, such as the AWS EC2®, Microsoft® Azure®, VMware® vCloud Air and private clouds running VMware ESXi/vSphere. SoftNAS provides enterprise-grade NAS shared storage capabilities, including high-availability with automatic failover.

Nothing is more critical to the continuity of your business than your data. Like the blood in your veins, it has to be safe and available 100% of the time. SoftNAS offers the mission-critical data protection and high-availability required for non-stop operation of business applications, websites and IT infrastructure. SoftNAS runs within the customer’s own hosts and/or in the public clouds, and provides a no compromise safety net for business information.

Unlike legacy storage appliances, SoftNAS offers the enterprise-grade data protection and high-availability capabilities required for non-stop operation, without the high storage acquisition and maintenance costs, and without the complexities and associated specialized storage skills.

Instead of locking your company and data into a particular vendor’s proprietary hardware/software storage appliance, SoftNAS provides customers with the same freedom of choice for storage that customers have come to expect from other IT infrastructure; e.g., servers, switches, firewalls. And because SoftNAS leverage the richness of cloud platforms, the full range of features and hardware-independent virtualization now apply equally to storage, providing the same benefits for storage that customers enjoy today for server virtualization.

Why SoftNAS Cloud?

Why should Docker users consider SoftNAS Cloud?

- ✓ Shared Storage for Docker applications
  - Many applications involve use of files and file systems
  - Enables rapid scale-out Docker clusters with high-availability
  - Full-feature NAS capabilities for Docker applications
- ✓ Ease of use
  - Manage data for all containers in a common *simple, yet powerful* storage solution for Docker applications
  - Quick and easy to configure in minutes for IT administrator and DevOps personnel without training
  - Available on-demand to meet IT and DevOps agile storage needs
  - Built in snapshots and writable clones for the stored container output; build – test – validate – repeat on cloned production data sets
  - Rapid recovery from data corruption or deletion events
  - Easy to set up and securely replicate large amounts of data across data centers, platforms and clouds, delivering analysts results from Big Data analytics to consumers on different platforms
  - Storage pools support dynamic addition of storage devices and thin-provisioned volumes without workload reconfiguration
  - No training or special storage skills required
  - Built upon familiar, standard Linux and ZFS open source technologies
  - Flexible open architecture and API's enable extensibility
  - No lock-in of customer data due to open architecture
  - Non-disruptive online storage administration and maintenance agility
  - Agile reconfiguration of storage online without disrupting production workloads
- ✓ Security and availability
  - Enhanced security built into AWS for EBS and SoftNAS for S3, AWS is the leading public cloud for Docker adoption
  - Makes cloud storage safer for business
  - Protects mission-critical data in the cloud
  - Delivers storage uptime with 99.999% reliability w/ dual controllers (5 minutes/year downtime)
  - Increases application performance and processing speeds via faster storage performance
- ✓ Scalability
  - Access to up to 16 PB of S3-backed cloud disk storage
  - Access to up to 154 TB of EBS from each EC2 instance as shared storage
  - Block replication scales efficiently to handle hundreds of millions of files and directories
  - Securely replicate data across any platform, data center or cloud

Common Use Cases

The following common use cases are addressed.

- Ease of application deployment
- Continuous Integration / Delivery
- Distributed application deployment to scale

Docker Containers vs Virtual Machines

First there was virtualization

A virtual machine is a method in which a modern server can run multiple operating systems on the same piece of physical hardware. There are several ways in which this is accomplished, but the underlying idea is the same. Utilize hardware power more efficiently by adding more than one operating system onto the same physical server. There are numerous benefits to running a server in a virtualized environment. Here are a few of the key points:

- **Redundancy**: The operating system is detached from the hardware. This allows a certain amount of portability. i.e., If one piece of hardware fails it is relatively easy to move that operating system to another piece of hardware.
- **Scalable**: Along with the portability, virtualized servers generally can be scaled a little easier. Meaning, because the server software is not tied to any hardware, it's easier to add additional servers to handle a larger workload.
- **Cost Savings**: This is pretty straightforward. It's not necessarily to buy multiple physical servers. In the pre-virtualization era multiple pieces of hardware were necessary to satisfy different computing requirements. For an email server and a crm server, would have very likely been deployed as to separate hardware servers.

Now with a basic understanding of virtualization and why it's beneficial lets dive into Containers.

Containers and how they are different

In short, containers further virtualize the underlying hardware. As discussed earlier in a typical virtualized environment there is one piece of hardware with several computers running on it and sharing resources. Each one of the virtualized computers will have its own operating systems and resource usage along with it. In a containerized environment, only one operating system would be running. Within that single operating system is where the containers reside. The containers each have the necessary software to run the application. Rather than having the overhead of all the operating systems, all the resources being are used by one underlying system. The rest of the computing power is now available to the application itself. It's important to know that containers do not have access to other containers. So from a security standpoint, containers are no more or less secure than a standard virtual server.

While virtualized servers do some things much better than traditional hardware, there still is room for improvement. Containers bring a different approach to virtualization that was not previously

- **Ease**: With a container, there is only one operating system to maintain versus many many virtualized server operating systems. Also, applications will behave the exactly the same across all containers. Meaning, containers developed and testing within a local computer can easily an successfully be moved up to a container in the cloud.

- **Speed of scalability**: Once an application is running in a container, it can be duplicated extremely easily. Since there is no operating system, only the software needs to be duplicated for the container. The time consumed for scaling changes from minutes and hours to several seconds.
- **Efficiency**: Without the additional burden of running multiple operating systems, each piece of hardware now has extra resources. These resources can be used to offer more power to the application(s) that are running within the containers.

The Storage Challenge for Containers

While containers have some amazing and simple advantages over virtualized servers, there are challenges to overcome. Chief among the challenges is storage.

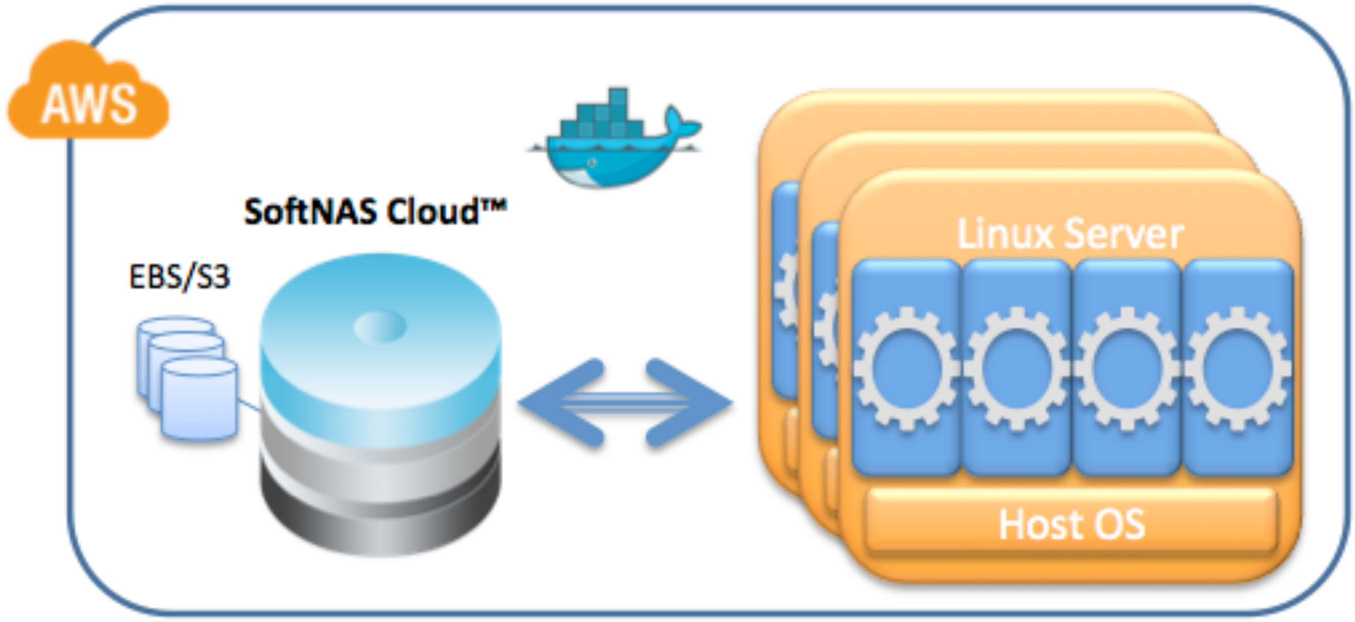
Docker storage limitations:

- The container has ephemeral storage, when the container is turned off, data is lost
- Container data cannot be imported nor exported
- Container data cannot be backed up and restored
- Container data cannot be stored based on storage capabilities; SSD for high IOPs, SATA for inexpensive large capacity
- Its not possible to specify volumes to be used from one old container to new container
- Its not possible to manage volumes after deleting the containers in which they were attached
- Because containers are intended to be lightweight, it is not feasible to implement shared storage within each container
- While some applications can work around shared storage limitations using object storage, there remain many use cases where file-based storage and shared storage are required.

Implementation

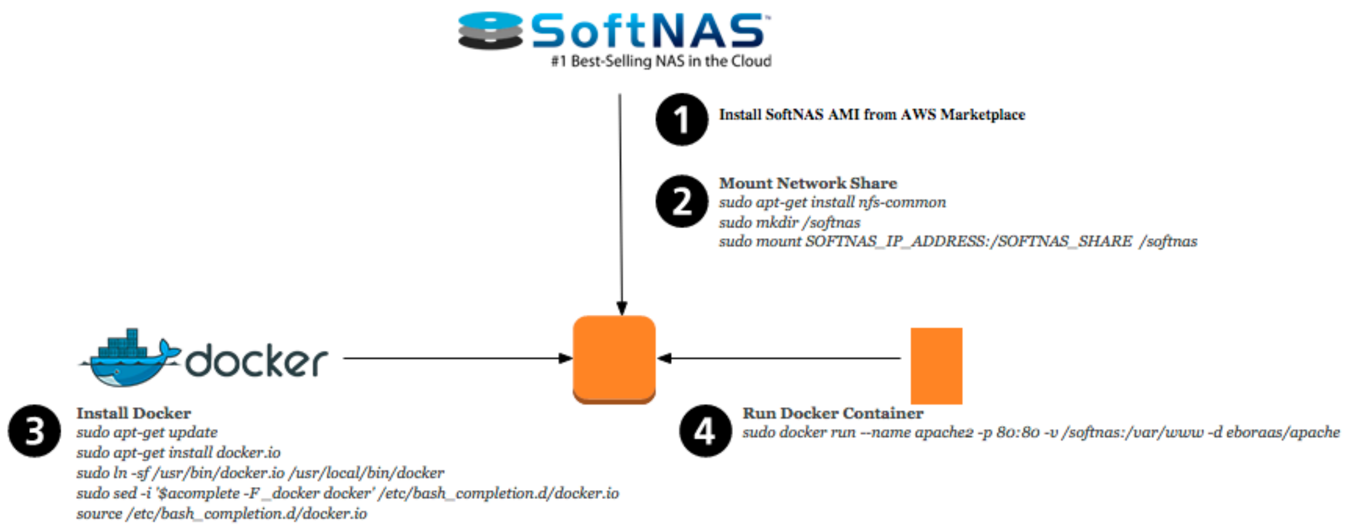
Ease of Application Delivery with Persistent Shared Storage

Web development with Docker utilizing SoftNAS Cloud solves storage issues. Docker provides rapid creation of ubiquitous development environments on the fly. SoftNAS Cloud provides continuous persistent shared storage expected in enterprise environments. The storage problem areas of Docker are resolved by SoftNAS Cloud.



Developers can also benefit from creating writeable snapshots of production data to develop and test with. The development lifecycle now becomes extremely flexible. The production environment is safer when developers are not permitted to directly access production infrastructure and data sets. QA testing cycles are faster when large amounts of data does not need to be copied for each test, and instantaneous storage snapshots and writable clones are used instead of time-consuming, expensive deep copies of data.

The following implementation demonstrates how a web developer could create a development environment that can be used to host both web data as well as a code repository. By doing so in the following fashion it can allow for maximum development flexibility and will keep strict security in place throughout the development lifecycle. More specifically, in this use case we will configure a container to run an apache webserver that will serve content from our SoftNAS file share.


SoftNAS
#1 Best-Selling NAS in the Cloud
1 Install SoftNAS AMI from AWS Marketplace
2 Mount Network Share
sudo apt-get install nfs-common
sudo mkdir /softnas
sudo mount SOFTNAS_IP_ADDRESS:/SOFTNAS_SHARE /softnas
docker
3 Install Docker
sudo apt-get update
sudo apt-get install docker.io
sudo ln -sf /usr/bin/docker.io /usr/local/bin/docker
sudo sed -i '$acomplete -F _docker docker' /etc/bash_completion.d/docker.io
source /etc/bash_completion.d/docker.io
4 Run Docker Container
sudo docker run --name apache2 -p 80:80 -v /softnas:/var/www -d eboraas/apache

Setting up a Docker Host

Setup starts with instructions for starting Docker on an Ubuntu host.

```
sudo apt-get update
sudo apt-get install docker.io
sudo ln -sf /usr/bin/docker.io /usr/local/bin/docker
sudo sed -i '$acomplete -F _docker docker' /etc/bash_completion.d/docker.io
source /etc/bash_completion.d/docker.io
```

In order to test use the version option to check that Docker installed.

```
sudo docker --version
```

Once Docker is installed map the host server to a SoftNAS Cloud share. Depending on the version of Ubuntu it may be necessary to install the nfs-common package.

```
sudo apt-get install nfs-common
```

Once the nfs tools are installed map the host to the SoftNAS server. As an example, map the drive to a /softnas folder on the host. First make the directory

```
sudo mkdir /softnas
```

Once the directory is made mount the share.

```
sudo mount SOFTNAS_IP_ADDRESS:/SOFTNAS_SHARE  /softnas
```

As an example:

```
sudo mount SOFTNAS_IP_ADDRESS:/eph/eph  /softnas
```

This mounts the directory from our ephemeral storage to the Docker host into the directory /softnas.

Another brief test:

```
sudo touch /softnas/host.file
```

Now check to make sure that the file is created.

```
ls /softnas
```

With the Docker host is configured, now connect to the hosts file system via the -v option in the Docker run command.

This command will launch an interactive Ubuntu container mapping a folder from the container named /softnas to the host folder created in the previous step named /softnas.

```
sudo docker run -i -t --name ubuntu -v /softnas:/softnas ubuntu /bin/bash
```

A command prompt is now launched that will allow a new container to be explored. Ensure that the share is writable from the container by creating a basic HTML file.

```
sudo cat > index.html
Type <html><h1>This is from SoftNAS</h1></html>
Then press Ctrl C to exit
```

Then double check

```
ls /softnas
```

This should now show index.html, as well as the host.file created earlier.

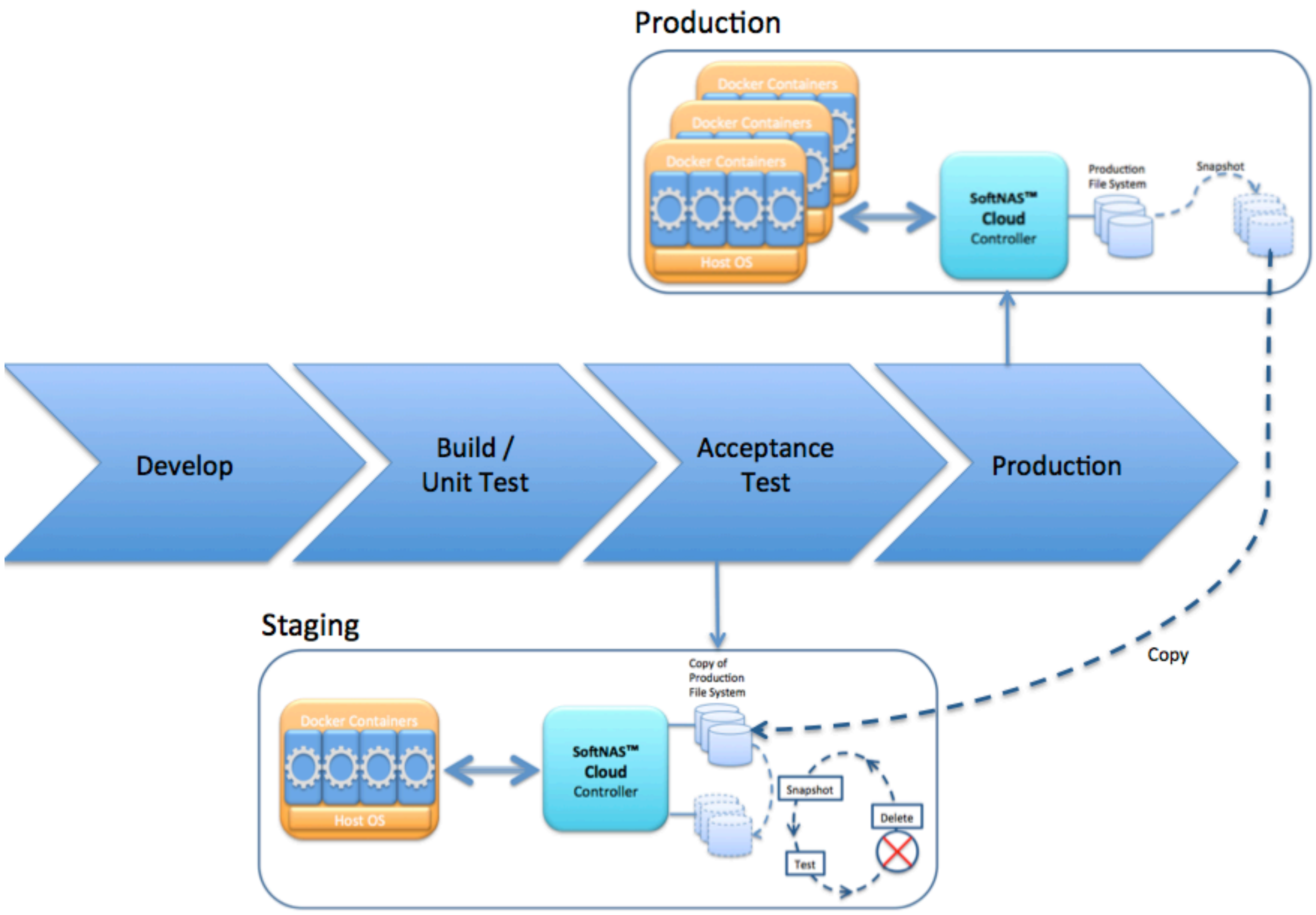
Once the file storage and access have been tested, and the html file has been created we can continue. Issue a run command to Docker that will pull an apache image from the Docker repository. Docker will then run a container with Apache installed, and it will serve the content from the SoftNAS share created earlier.

```
sudo docker run --name apache2 -p 80:80 -v /softnas:/var/www -d eboraas/apache
```

Continuous Integration and Delivery

The cloud model has evolved rapidly over the last few years, from simple on-demand infrastructure to rich environments providing agile development capabilities for new applications. DevOps has emerged as a methodology driving the integration and collaboration of IT professionals and software developers. Software methods have grown beginning with Continuous Integration, which describes developers working closely together to merge code up to 10 times a day. Beyond integration is Continuous Deployment increasing the release cycle to multiple releases per day.

Continuous Integration and Delivery have increased demand for the management of production and test data. Production data must have enterprise class security, reliability, and availability while integrating with application rapid deployment tools such as Docker Containers.



DevOps must be able to develop and test against a production-like system with production-like data. DevOps create a Staging environment either in on-premise or public Clouds to perform quality acceptance tests. SoftNAS Cloud is readily deployable in a wide range of cloud configurations. Live production file systems can be coherently frozen in time through SoftNAS Cloud snapshots, and then copied from the production to staging environment (or simulated production data sets can be used where privacy issues preclude direct use of production data by DevOps).

DevOps can continually validate application quality in the Staging environment by testing against writable SoftNAS snapshots. Instantaneously snapshot creation allows quick test cycles where data is manage by creating and mounting snapshots, executing tests to read/write the snapshots, deleting the snapshots at test conclusion, and looping back to snapshot creation supporting code fix and retest.

Deploy Applications to Scale

The previous section discussed how the SoftNAS Cloud solution helped to simplify a continuous development cycle by delivering complete storage flexibility to Docker containers. This section will extend that premise, by showing how easily a web application can be moved from development to production to scale.

In order to achieve application scale, automation tools are valuable to minimize effort and complexity. AWS Elastic Beanstalk is one automation tool that provides an easy-to-use service for deployments and solves resource problems enabling the scaling of web applications and services. Developers simply upload code and Elastic Beanstalk automatically handles deployment, capacity provisioning, load balancing, auto-scaling and health monitoring. Elastic Beanstalk simplifies the creation, deployment, and operations of Web applications as they scale, with AWS provisioning and configuring AWS resources such as EC2 instances, Elastic Load Balancer, and Auto Scaling Group. Docker support in Elastic Beanstalk extends the deployment capabilities to any software stack.

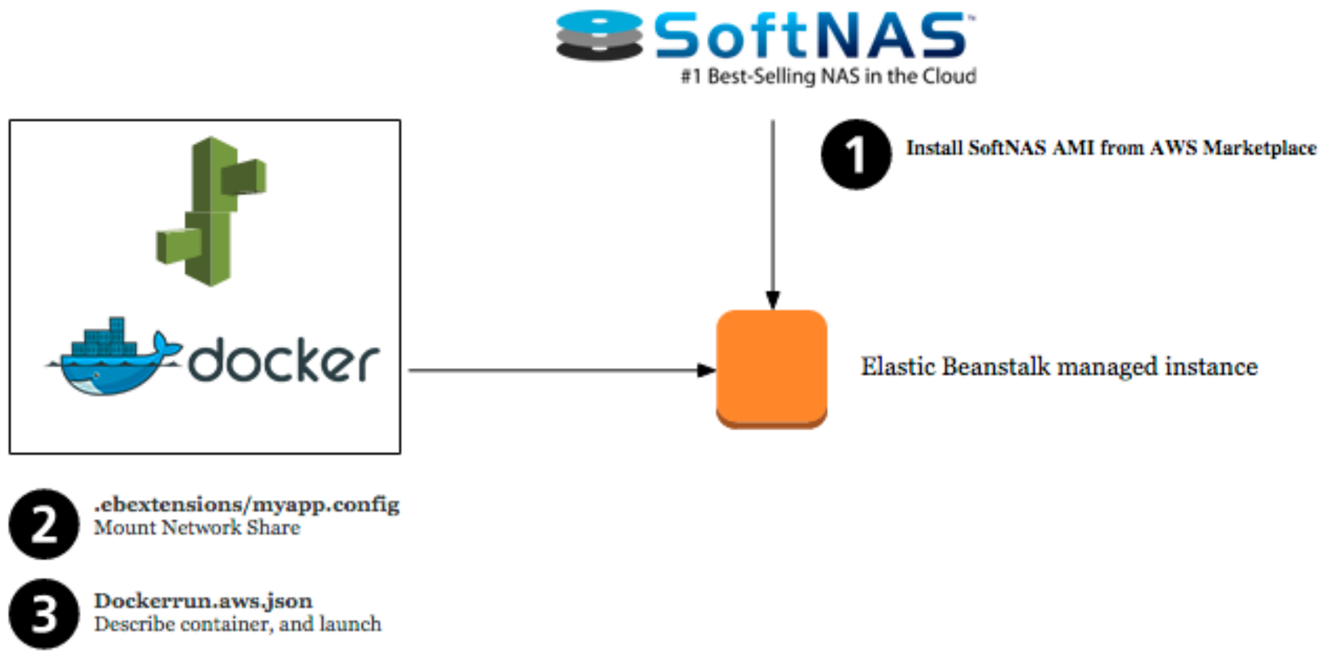
Utilizing SoftNAS Cloud with AWS Elastic Beanstalk and Docker creates a simple and scalable way to move your web application to a production level architecture. SoftNAS Cloud provides the sharable scalable storage to the auto scaling Docker containers that are managed by Elastic Beanstalk.

The following implementation will describe how to create scripts to automatically configure hosts and containers to utilize the SoftNAS share. By creating these scripts developers are poised to rapidly scale out their applications with persistent shareable storage.

Configuration Overview

Deployment will now be integrated with Beanstalk to launch new instances automatically. An apache container in Docker will serve files from a SoftNAS share.

There are two main files used to tell Beanstalk how to build the instances. One file configures the map to the beanstalk host, and one file will tell Docker how to configure its container.


SoftNAS
#1 Best-Selling NAS in the Cloud
1 Install SoftNAS AMI from AWS Marketplace
docker
Elastic Beanstalk managed instance
2 .ebextensions/myapp.config
Mount Network Share
3 Dockerrun.aws.json
Describe container, and launch

Configure the Beanstalk Docker Host

Elastic beanstalk allows the creation of files to automatically configure the instances as created. This is a very important part because it will allow mapping the Docker host to the SoftNAS share. Beanstalk allows this by reading YAML configuration files in a hidden directory called ".ebextensions". The file for this example will look like the following:

```
---
packages:
yum:
 nfs-utils: []
commands:
MKDIR:
 command: mkdir /softnas
NFS Map:
 command: mount [softnas host ip]:/eph/eph  /softnas
```

It's important to remember that the default Beanstalk host is the Amazon Linux AMI. Do a couple of items specific to that AMI.

Ensure that "nfs-utils" is installed
Create the mount point "/softnas"
Mount the Softnas share to the host. Please make sure to change "softnas host ip" to the corresponding correct ip.

Configure Elastic Beanstalk with a Docker Container

There are three main ways to describe a container, and how it is going to run with the Elastic Beanstalk Docker host.

- **Dockerfile**: A Docker file is a plain text document that is used by Docker to build a custom image to be run in a container

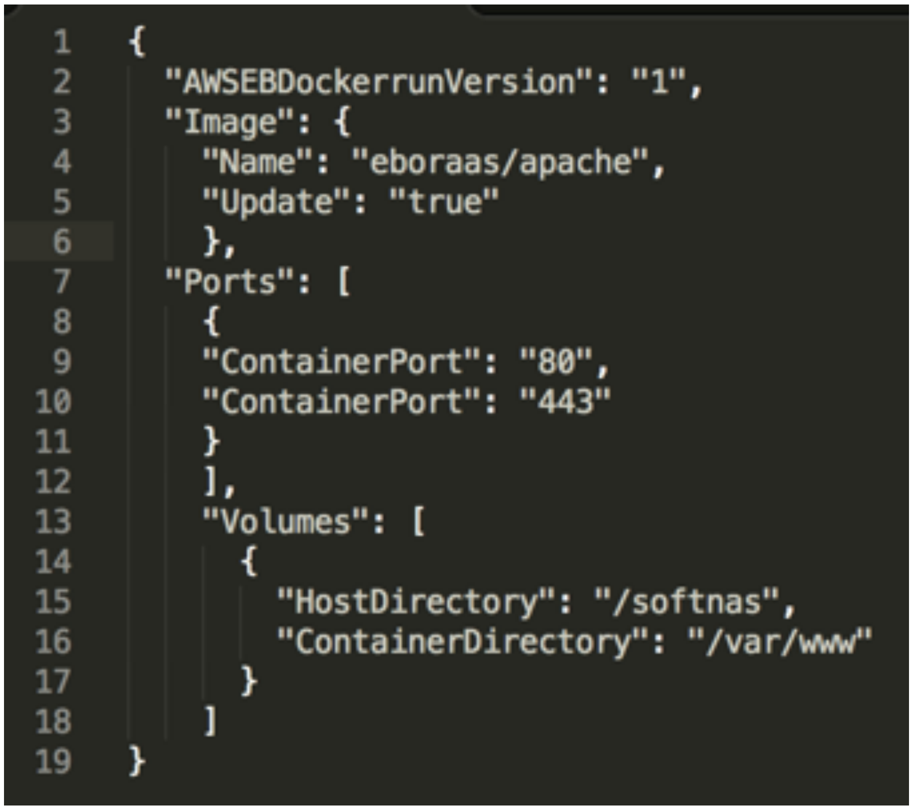
- **Dockerrun.aws.json**: A JSON formatted document used to download images from the Docker repository as well as configure any options while running that container. This is the method that this document will use.
- **Combination**: Elastic Beanstalk will allow use of a combination of Dockerfile as well as Dockerrun to describe the Docker container in greater detail.

Create Dockerrun.aws.json to connect to SoftNAS

The following json file is going to download a prebuilt image from the Docker repository, and launch it onto the Docker host.

```
{
        "AWSEBDockerrunVersion": "1",
        "Image": {
                "Name": "eboraas/apache",
                "Update": "true"
        },
        "Ports": [
                {
                        "ContainerPort": "80",
                        "ContainerPort": "443"
                 }
        ],
        "Volumes": [
                {
                        "HostDirectory": "/softnas",
                        "ContainerDirectory": "/var/www"
                }
        ]
}
```

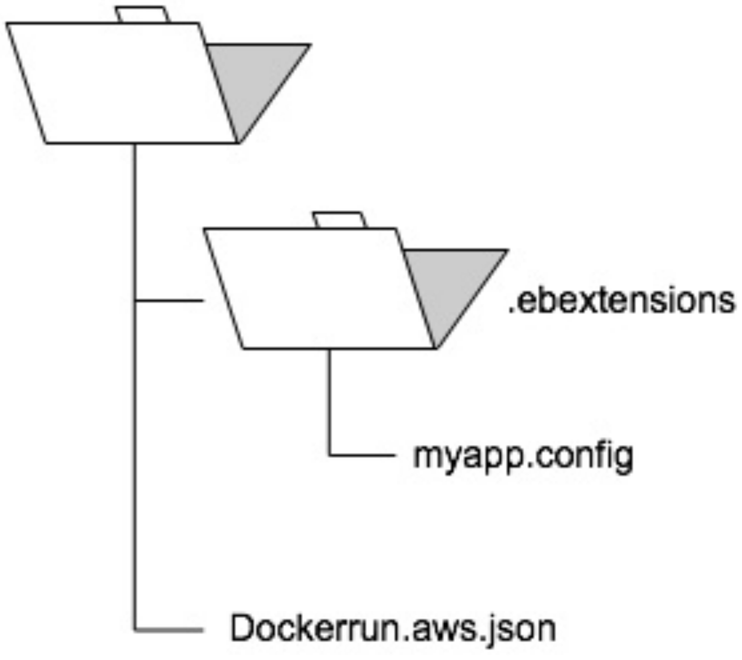
Here is a screenshot to make sure that the document is formatted correctly. JSON is very sensitive to formatting irregularities.



```
{
  "AWSEBDockerrunVersion": "1",
  "Image": {
    "Name": "eboraas/apache",
    "Update": "true"
    },
  "Ports": [
    {
    "ContainerPort": "80",
    "ContainerPort": "443"
    }
    ],
    "Volumes": [
      {
        "HostDirectory": "/softnas",
        "ContainerDirectory": "/var/www"
      }
    ]
}
```

Compress Files to upload to Elastic Beanstalk

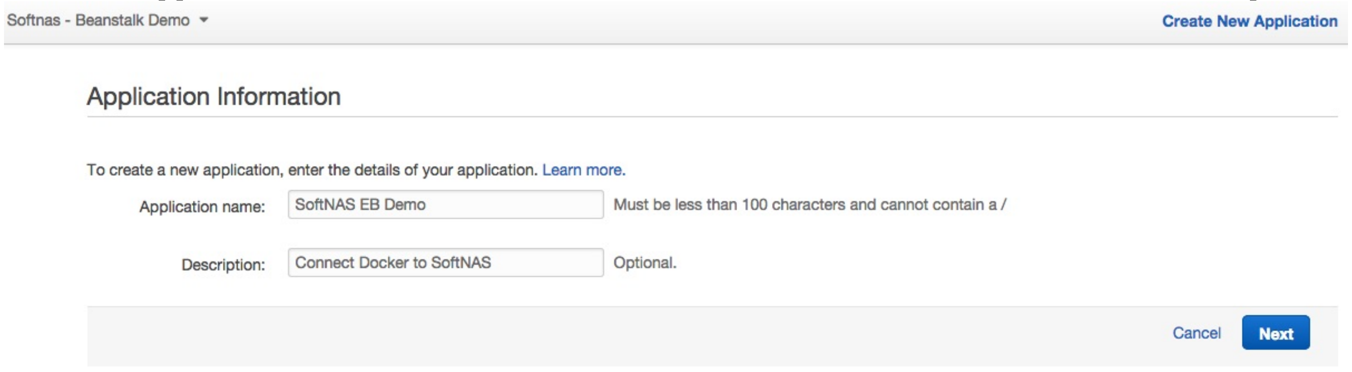
At this point the files will need to be put into a folder. The most important thing to remember is to have all of the files in the root zip file. In other words the files should be compressed, and not in a folder.



Configure Elastic Beanstalk

Select "create a new application" in the upper right hand side of the beanstalk console.

Name the application, in this case the name SoftNAS EB Demo was chosen. Provide a description.



Application Information

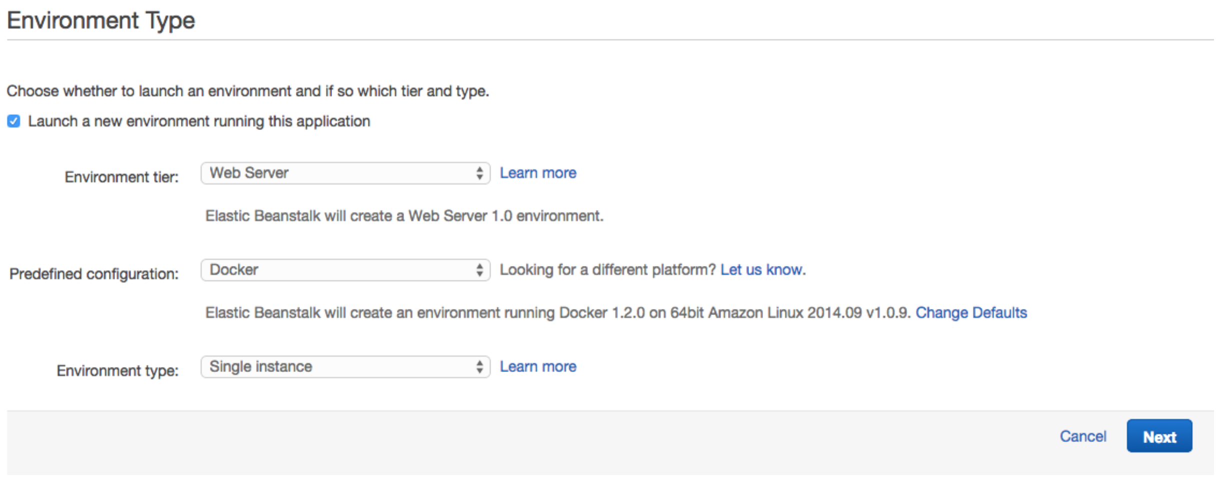
To create a new application, enter the details of your application. Learn more.

Application name: SoftNAS EB Demo — Must be less than 100 characters and cannot contain a /

Description: Connect Docker to SoftNAS — Optional.

Next, configure the basic Environment type of Elastic Beanstalk.

- Environment Tier: Web Server
- Predefined Configuration: Docker
- Environment type: Single Instance – For production the recommended environment type is "Load balancing, Autoscaling"


Environment Type

Choose whether to launch an environment and if so which tier and type.

☑ Launch a new environment running this application

Environment tier: Web Server — Learn more

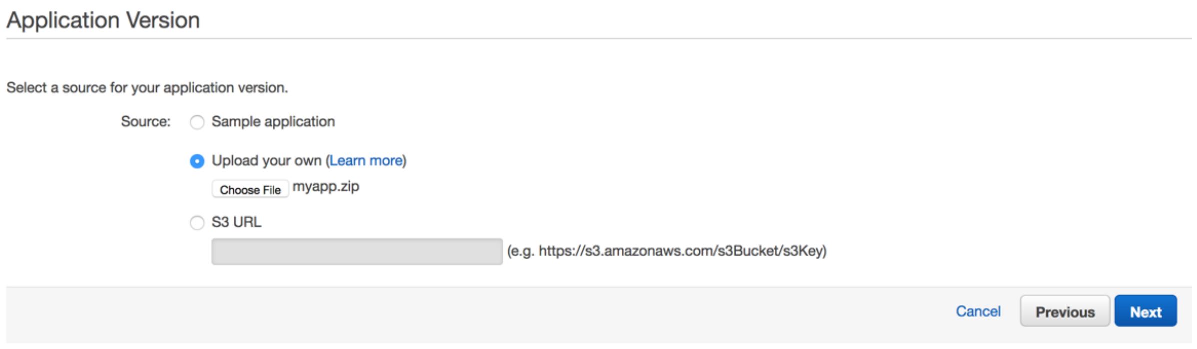
Elastic Beanstalk will create a Web Server 1.0 environment.

Predefined configuration: Docker — Looking for a different platform? Let us know.

Elastic Beanstalk will create an environment running Docker 1.2.0 on 64bit Amazon Linux 2014.09 v1.0.9. Change Defaults

Environment type: Single instance — Learn more

In the next session upload the zip file that was created previously. Select the radio button next to "Upload your own" and select the zip file.


Application Version

Select a source for your application version.

Source: ○ Sample application

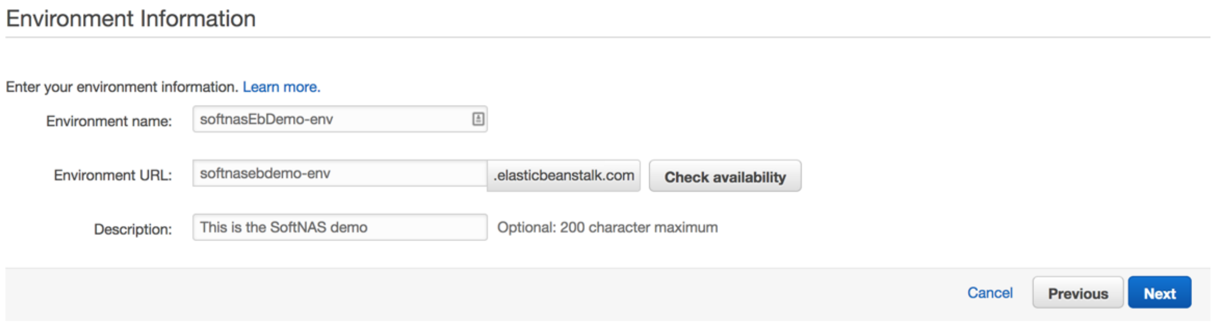
● Upload your own (Learn more)

Choose File myapp.zip

○ S3 URL

(e.g. https://s3.amazonaws.com/s3Bucket/s3Key)

In the next session simply name the environment and environment URL.


Environment Information

Enter your environment information. Learn more.

Environment name: softnasEbDemo-env

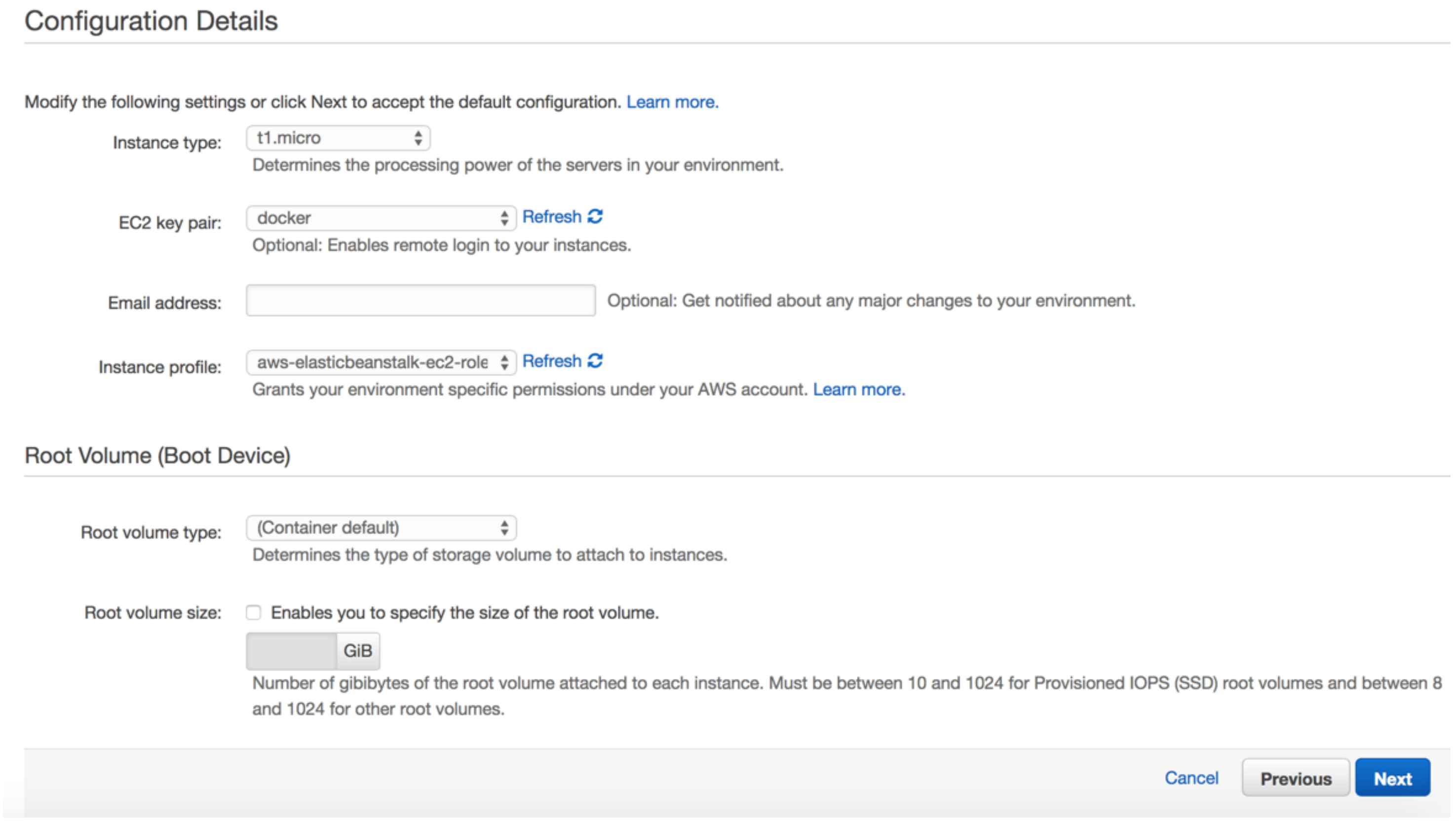
Environment URL: softnasebdemo-env .elasticbeanstalk.com

Description: This is the SoftNAS demo Optional: 200 character maximum

Elastic Beanstalk will automatically check that the URL is available. This is where to point the domains cname record.

On the additional resources page, check the box for "create this environment inside a vpc" while it is not necessary for this demo, it is best practice, and it allows for more flexibility moving forward.

In the configuration details, assign a pem key for debugging and troubleshooting purposes. In a production environment, it is best practice to leave the pem key assignment off since the environment should be completely configured and controlled using beanstalk.


Configuration Details

Modify the following settings or click Next to accept the default configuration. Learn more.

Instance type: t1.micro
Determines the processing power of the servers in your environment.

EC2 key pair: docker Refresh
Optional: Enables remote login to your instances.

Email address: Optional: Get notified about any major changes to your environment.

Instance profile: aws-elasticbeanstalk-ec2-role Refresh
Grants your environment specific permissions under your AWS account. Learn more.

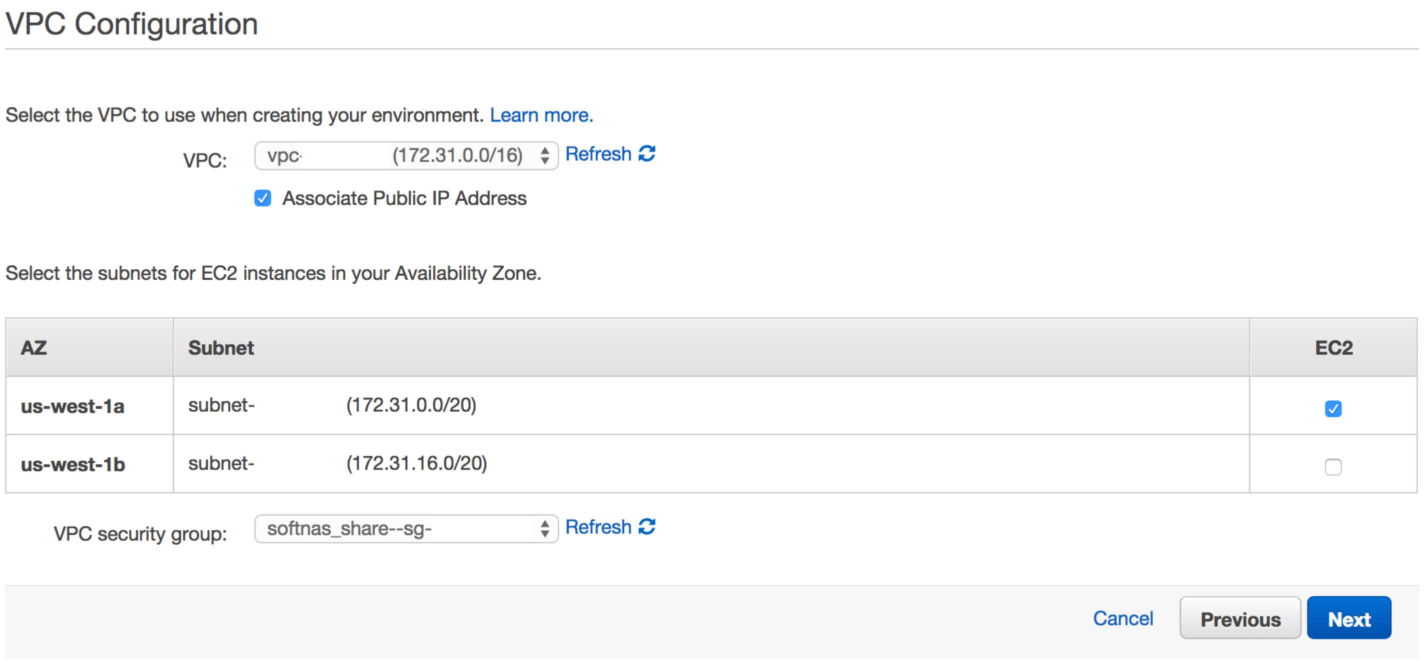
Root Volume (Boot Device)

Root volume type: (Container default)
Determines the type of storage volume to attach to instances.

Root volume size: ☐ Enables you to specify the size of the root volume.
GiB
Number of gibibytes of the root volume attached to each instance. Must be between 10 and 1024 for Provisioned IOPS (SSD) root volumes and between 8 and 1024 for other root volumes.

In the environment tags page add a nametag so the instances are clearly defined.

In the next Beanstalk section select the VPC and subnet locations. In this sample we have selected two availability zones in case we would like to scale in the future. Make sure to select the security group that we created in the original use case. If you do not have that security group created you can easily create one. For testing purposes you will need to create a group that allows all traffic to itself.



VPC Configuration

Select the VPC to use when creating your environment. Learn more.

VPC: vpc· (172.31.0.0/16) Refresh

[✓] Associate Public IP Address

Select the subnets for EC2 instances in your Availability Zone.

AZ	Subnet	EC2
us-west-1a	subnet- (172.31.0.0/20)	✓
us-west-1b	subnet- (172.31.16.0/20)	

VPC security group: softnas_share--sg- Refresh

High Availability and Replication

All of the features offered by SoftNAS Cloud apply toward providing enterprise class capabilities in Docker Container deployments. The design of your SoftNAS installation on Amazon EC2 depends on the amount of usable storage, the IOPS you need and the level of availability required. You can choose from a number of configurations, depending upon your use case and availability requirements. Use the Cross-zone HA Architecture for 99.999% availability.

SoftNAS provides high-availability and automatic, seamless failover across availability zones with its SNAP HA™ functionality, ensuring shared storage is always available, even when an entire zone or specific instance fails.

Cross-zone HA operates within a VPC. NAS traffic is routed through an enhanced elastic IP using SoftNAS patent-pending Elastic HA™ technology; that is, NFS, CIFS and iSCSI traffic is routed to a primary SoftNAS controller in one zone, and a secondary controller operates in a different availability zone. NAS clients can be located in any availability zone.

SnapReplicate™ performs asynchronous block replication from the primary controller A to the backup controller B, keeping the secondary hot with the latest changed data blocks once per minute. In the event of a failure in AZ1 shown above, the Elastic HA IP automatically fails over to controller B in AZ2, in less than 30 seconds. Upon failover, all NFS, CIFS and iSCSI sessions reconnect with no impact on NAS clients (i.e. no stale file handles or other ill side-effects and no need to restart NAS clients, which continue as if nothing had happened).

SNAP HA provides the following capabilities:

- Cross zone high-availability
- Automatic failover
- Uses SoftNAS SnapReplicate feature for secure block replication
- SyncImage™ handles an initial full replication cycle (like a full backup)
- Once per minute, SnapReplicate replicates only the changed data blocks from last minute
- Provides a “warm” near real-time backup with automatic failover
- Elastic HA™ technology provides seamless failover or cross-zone NAS traffic (NFS, CIFS/SMB, iSCSI) for non-stop operation
- SnapReplicate replication uses PKI authentication and configurable encryption to secure replication sessions
- Automatic failover is triggered by failure of the primary instance, loss of network connectivity to the primary or anything that impairs the controller from serving storage to NAS clients.
- Manual failover (takeover) and failback (giveback) operations provide the administrator the ability to control which controller is the primary, making periodic maintenance straightforward
- Activate and deactivate controls enable administrator to place the cluster into maintenance mode

The following diagram is an example deployment of SNAP HA across availability zones, with both public and private subnets in each zone. For more details, consult the SoftNAS High Availability Guide.

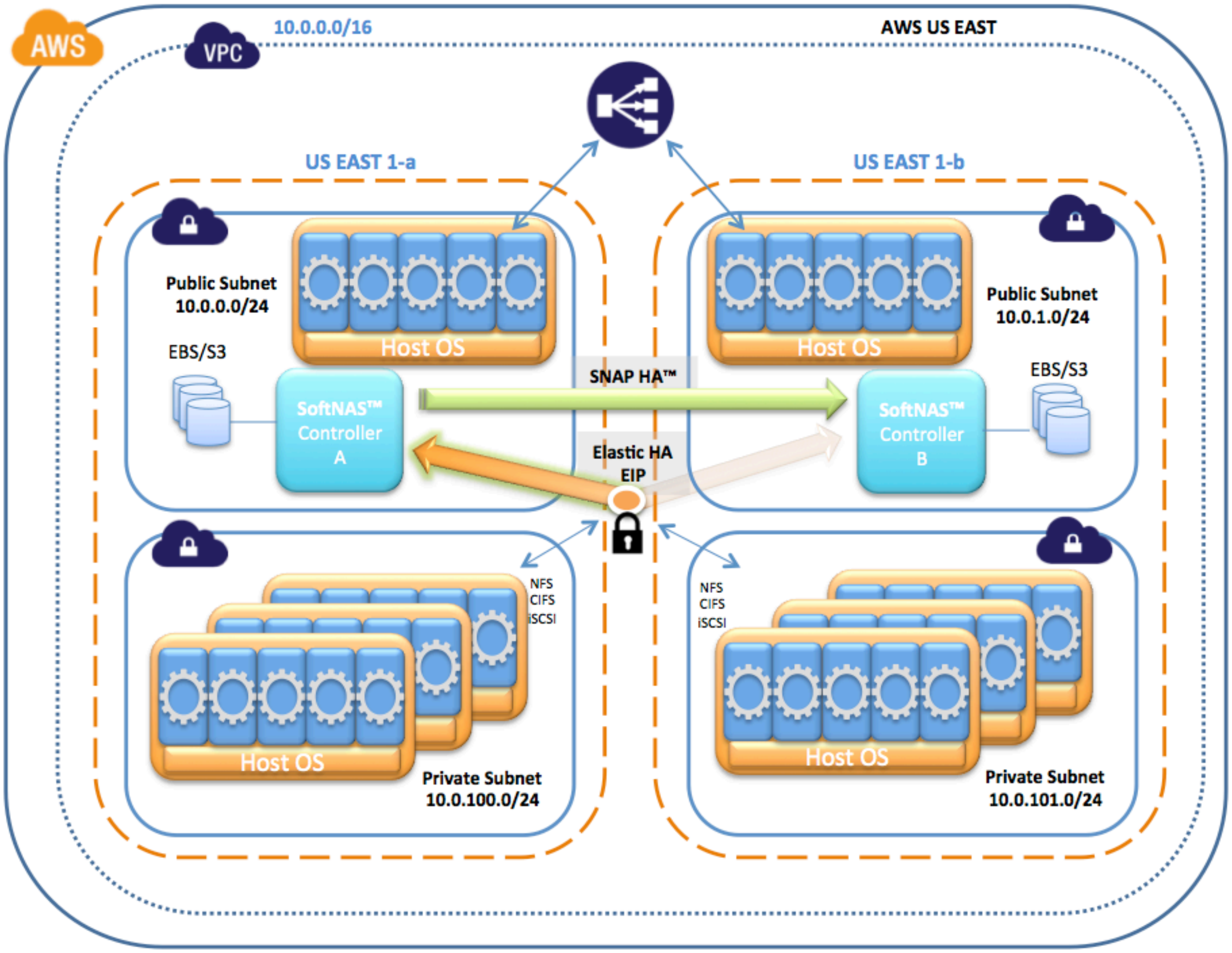


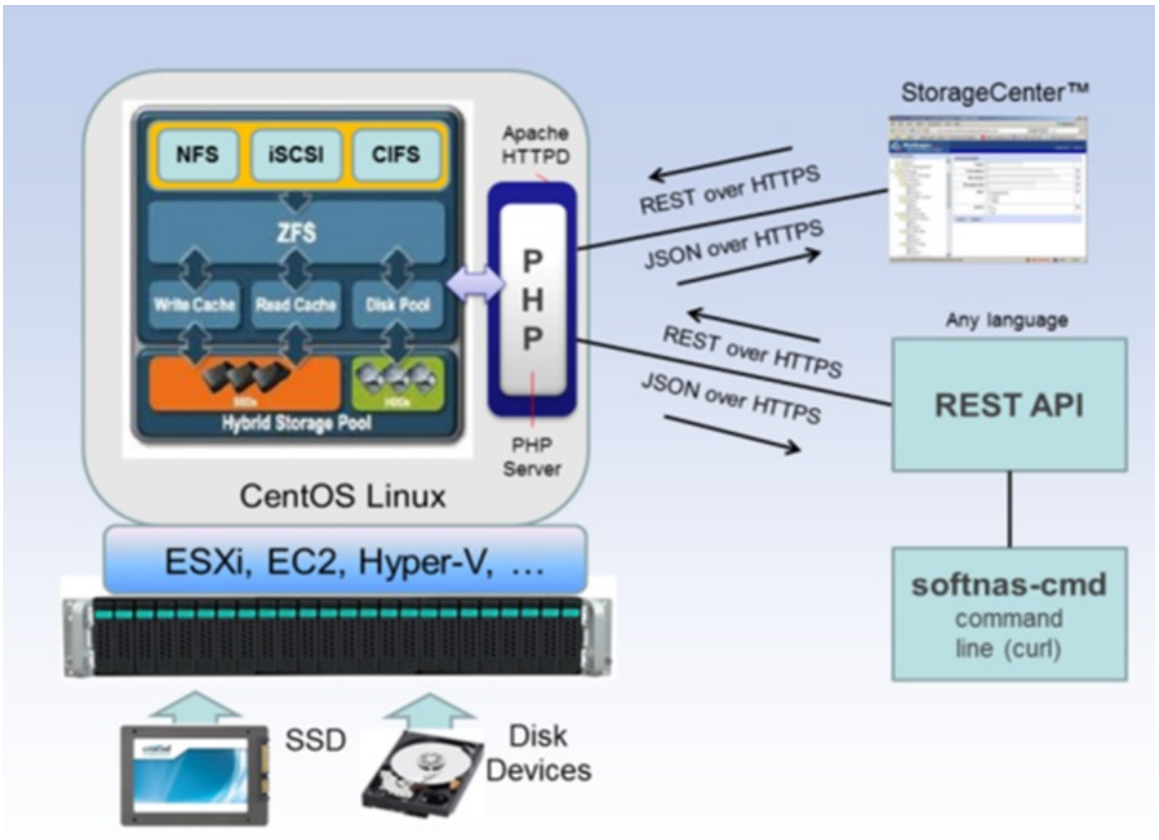
Figure 1 – Cross-zone HA Configuration with Docker Containers

Introduction to the API

The SoftNAS Rest API provides access to the PHP-based SoftNAS admin server. This provides access to SSD and disk device management on the EC2, Azure, and vSphere hosts. The SoftNAS API can be programmed in any language that supports HTTPS requests and responses, including Javascript with Ajax, PHP, CURL, PERL, .NET, Java, etc.

The SoftNAS Rest API uses GET, POST, PUT and DELETE requests sent over HTTPS connections to the Apache web server running on Linux, which in turn are processed by the PHP-based SoftNAS admin server. The SoftNAS admin server returns its responses as JSON-formatted strings via the HTTP response. The SoftNAS REST API offers a way for third party systems to access the same API that is used by the SoftNAS StorageCenter administration GUI. This provides access to the SoftNAS admin server, which manages the SoftNAS run-time environment.

In addition, the "softnas-cmd," a command-line utility written in CURL, provides access to the same API calls from the Linux command line. The command line operations are defined in the Command Reference section.



The CLI provides command line access to the API set for quick and easy storage administration. Both methods are available for programmatic storage administration by DevOps teams who want to design storage into CloudFormation and other automated processes. For more details, refer to the SoftNAS API and CLI Guide.

How to Get Started

Launch from Marketplace (Free Tier and 30-day free trials available)

Try SoftNAS Cloud in your AWS account for free. Choose any instance size you prefer for free (certain AWS usage fees may apply).

Read the Documentation

Learn more about SoftNAS by going deeper into the documentation to get all the details.

Questions? Contact SoftNAS Sales and Support staff to get your questions answered today.