

BUILD A WEBSITE WITH AMAZON LIGHTSAIL

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Amazon Lightsail is a cloud computing service offered by Amazon Web Services (AWS) that allows instances (virtual private servers) to be created quickly and easily. The instances are then hosted in the AWS Cloud. AWS Lightsail is the perfect tool for building small startup projects, simple web applications, databases, and for deploying and managing testing/development environments. Out of the box, AWS Lightsail includes all the tools needed to launch these scalable, managed environments with affordable monthly pricing. This paper explains the steps for using Lightsail to set up a website utilizing WordPress as a blueprint.

Below is a basic Lightsail instance running in the East Region (Ohio), on a Linux the platform, using the WordPress blueprint, 1GB RAM, 1 vCPU, 40GB of storage, and has a static IP address assigned. This instance will be used to host the website we will build and from here we can manage our instance as needed. We can increase storage by adding additional disk space (Storage), view our instance’s incoming/outgoing traffic (Metrics), configure or reconfigure our instance’s IP address (Networking), make a backup of our instance (Snapshots), create labels for our instance(s) to make them easier to identify in the console (Tags), track updates to our instance (History), and delete the instance (Delete).

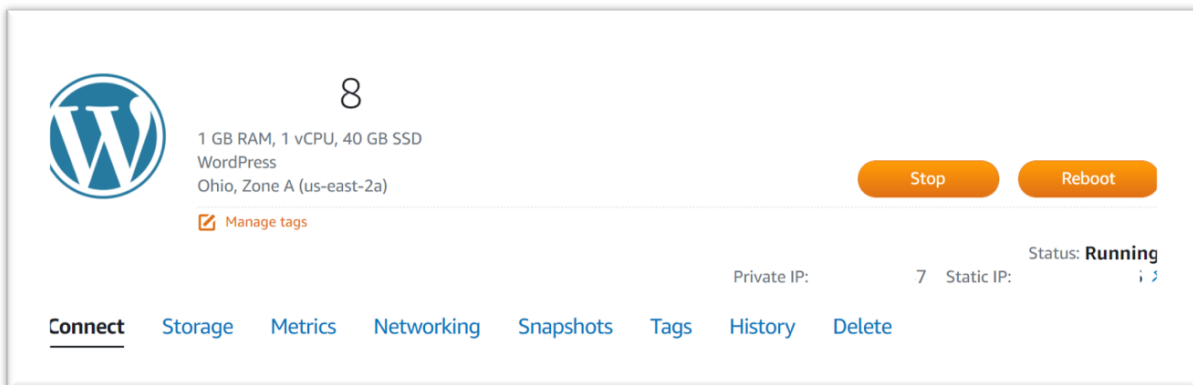


EXHIBIT 1: A BASIC LIGHTSAIL INSTANCE

To create the instance above, we first need to access the AWS Management Console, select the Lightsail service, and then click “Create instance”. In the image below, under the “All Services” tab, there is a list of other services offered by AWS that can be used in conjunction with our Lightsail instance, such as Lambda, to run code. Lightsail instances include 5TB of data transfer for both inbound and outbound data. With 5TB of data, your site could easily support over 2000 visitors a day – browsing as well as downloading files.

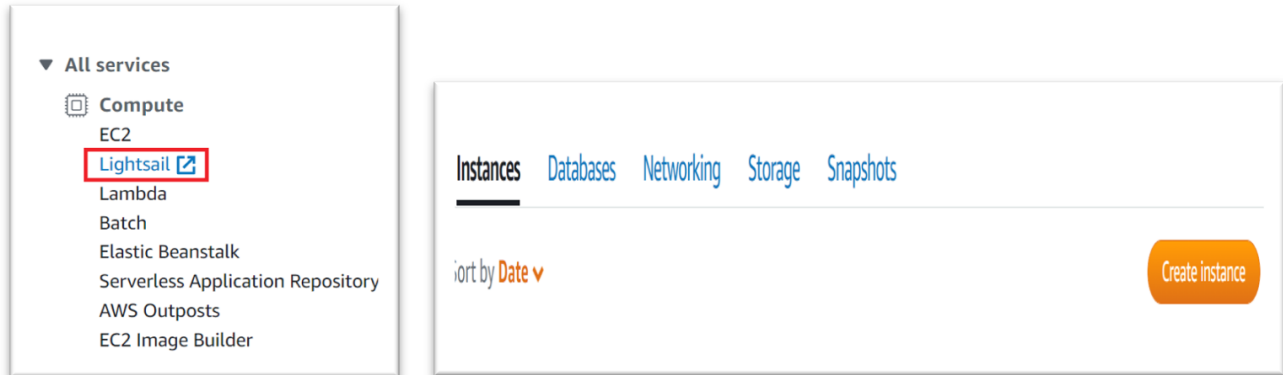


EXHIBIT 2: AWS SERVICES

As a note, the EC2 service also offers the option to create instances, but those are typically for large-scale projects or large corporations because of the amount of inbound and outbound traffic. An EC2 instance will incur costs for outbound data transfer depending on the amount of data transferred out. Exhibit 3 below is the EC2 pricing to run an instance in the same region as our Lightsail example.

Region: US East (Ohio) ▾

	Pricing
Data Transfer IN To Amazon EC2 From Internet	
All data transfer in	\$0.00 per GB
Data Transfer OUT From Amazon EC2 To Internet	
Up to 1 GB / Month	\$0.00 per GB
Next 9.999 TB / Month	\$0.09 per GB
Next 40 TB / Month	\$0.085 per GB
Next 100 TB / Month	\$0.07 per GB
Greater than 150 TB / Month	\$0.05 per GB

EXHIBIT 3: EC2 PRICING EXAMPLE¹

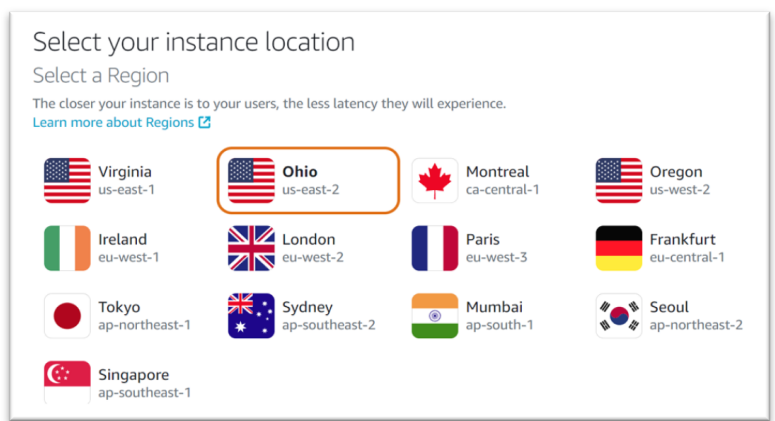


EXHIBIT 4: AVAILABILITY ZONES

¹ "Amazon EC2 On-Demand Pricing (Data Transfer)" *Amazon Web Services*, 2021, aws.amazon.com/ec2/pricing/on-demand

After the instance has been created, we choose the region in which we want our instance to be hosted, shown in Exhibit 4 above – each region can have up to six Availability Zones (AZ). An Availability Zone is comprised of one or more physical data centers for AWS. These data centers are highly secured environments that are continuously maintained and updated. Depending on the number of instances running and what they are being used for, it is best practice to host instances in multiple regions/zones in case of any power outage or system failure due to human error or a natural disaster. If an application is replicated across multiple AZs, latency, and downtime are minimal to none.

Next, we select our platform and blueprint. The Linux/Unix blueprints offer both application and operating system options, as well as operating system-only options (shown below), as opposed to Windows blueprints which have the operating system only. Here, we’re using WordPress as the blueprint because it has a simple and easy-to-understand interface. The only requirements to begin with are to have a domain name and a hosting service (we’re using AWS), and it’s free.

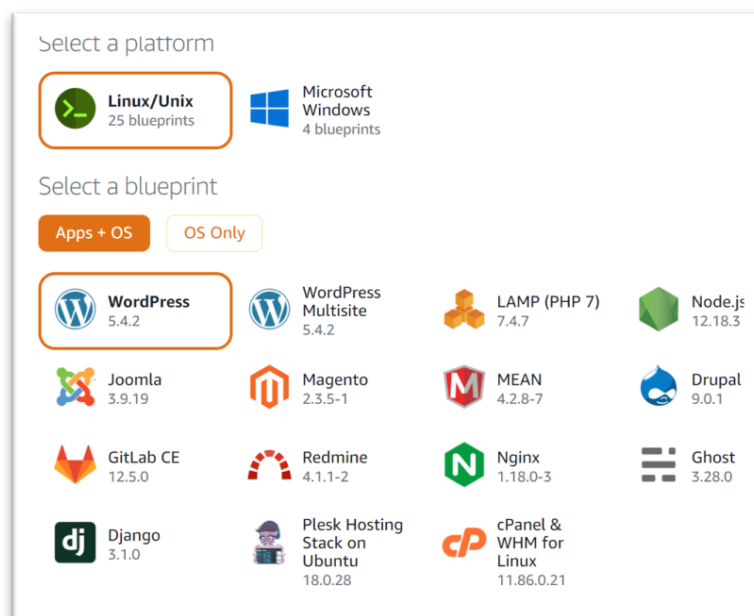


EXHIBIT 5: PLATFORM AND BLUEPRINT

Next, we choose our instance plan, with the most basic plan starting at \$3.50 per month.

Choose your instance plan ?

New! Check out our new 16 GB and 32 GB RAM bundles!

Sort by: Price per month Memory Processing Storage Transfer

Price per month	Memory	Processing	Storage	Transfer
\$3.50 USD	512 MB	1 vCPU	20 GB SSD	1 TB
\$5 USD	1 GB	1 vCPU	40 GB SSD	2 TB
\$10 USD	2 GB	1 vCPU	60 GB SSD	3 TB
\$20 USD	4 GB	2 vCPUs	80 GB SSD	4 TB
\$40 USD	8 GB	2 vCPUs	160 GB SSD	5 TB

EXHIBIT 6: INSTANCE PLAN

Name it, create it, and that's it

Identify your instance

Your Lightsail resources must have unique names.

WordPress-1

Create instance

EXHIBIT 7: CREATE THE INSTANCE

At this point, the instance is automatically assigned a dynamic IP address. For website purposes, the instance will need to be updated to have a static IP address assigned to it. Otherwise, if the server is rebooted, the location of our website will be changed and thus unreachable.

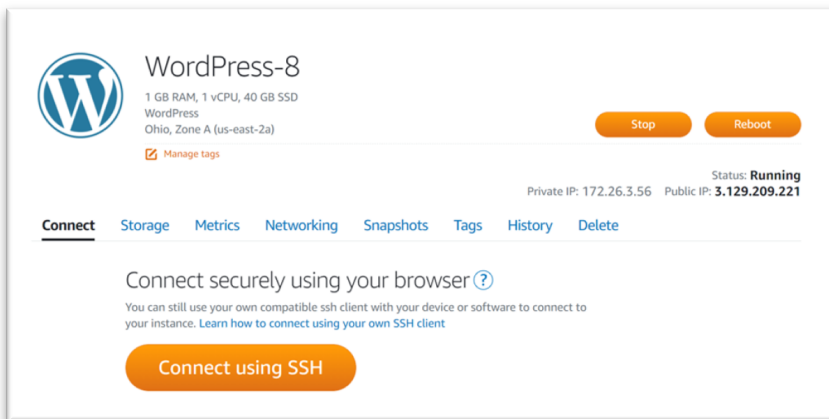
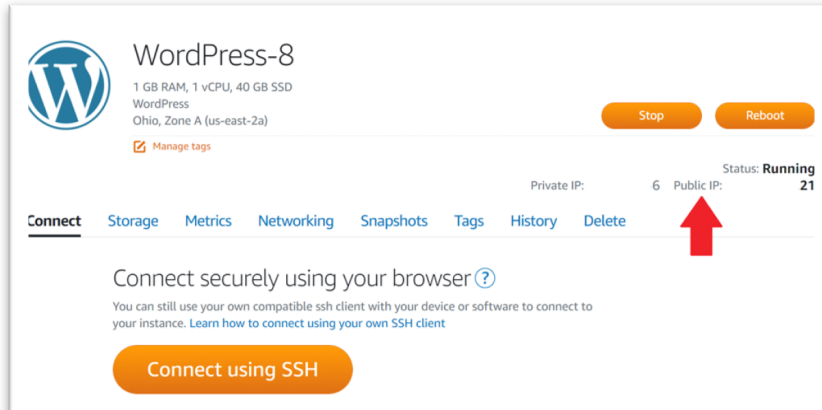


EXHIBIT 8: PUBLIC IP VERSUS PRIVATE IP

To make this change, under the "Networking" tab we select "Create static IP"

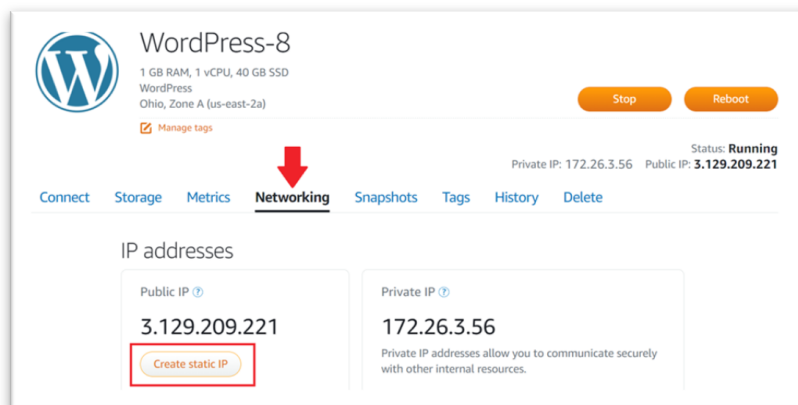


EXHIBIT 9: CREATING A STATIC IP

From here, we choose our newly created instance, name the assigned static IP- address, and select “Create”.

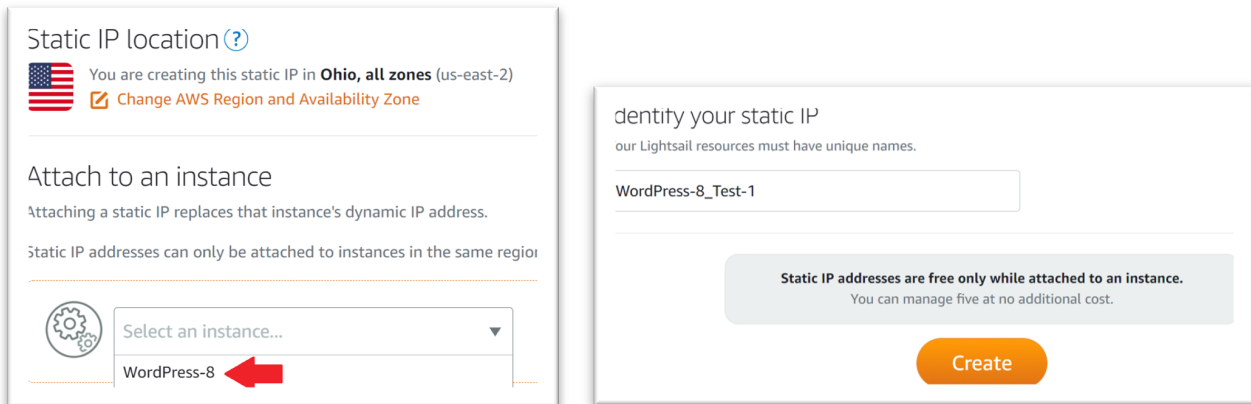


EXHIBIT 10: IDENTIFYING THE STATIC IP

A new static IP address has now been assigned to our instance. At this point, if we already have an existing domain (for example, “www.mysite.com”), we can configure that domain to point to your static IP address. Domain names can be registered with sites such as GoDaddy, Domain.Com, and Bluehost.

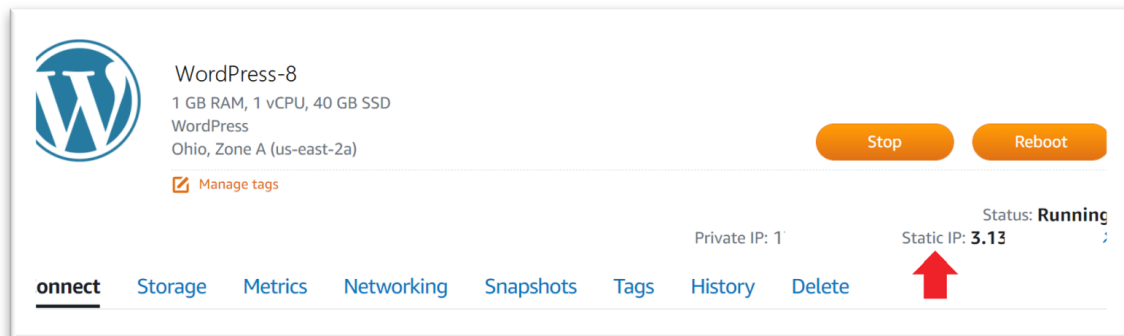


EXHIBIT 11: THE NEW STATIC IP

Now, with the instance, or “shell”, of the website created and assigned a static IP address, we click “Connect using SSH” so that we can connect to it securely.



EXHIBIT 12: CONNECTING SECUREL

We are now in the secure shell of the instance. Below are initial actions that should be executed, along with the associated commands:

1. Retrieve the password for the site: **cat bitnami_application_password**
2. Remove the default banner (shown in the next set of images below): **sudo /opt/bitnami/apps/wordpress/bnconfig -- disable_banner 1**
3. Restart the instance: **sudo/opt/bitnami/ctlscript.sh restart apache**

```

lightsail.aws.amazon.com/ls/remote/us-east-2/instances/WordPress-8/terminal?protocol=ssh
Linux ip-172-26-3-56 4.19.0-9-cloud-amd64 #1 SMP Debian 4.19.118-2+deb10u1 (2020-06-07) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

  BITNAMI
#####
*** Welcome to the Bitnami WordPress 5.4.2-0                ***
*** Documentation: https://docs.bitnami.com/aws/apps/wordpress/ ***
*** https://docs.bitnami.com/aws/                          ***
*** Bitnami Forums: https://community.bitnami.com/         ***
#####
### For frequently used commands, please run: ###
### sudo /opt/bitnami/bnhelper-tool ###
#####

Last login: Mon Sep 7 21:11:36 2020 from 52.95.24.65
bitnami@ip-172-26-3-56:~$
bitnami@ip-172-26-3-56:~$
bitnami@ip-172-26-3-56:~$ cat bitnami_application_password
    
```

EXHIBIT 13: SECURE SHELL

Here is what our newly created instance (website) looks like from a web browser before removing the banner:

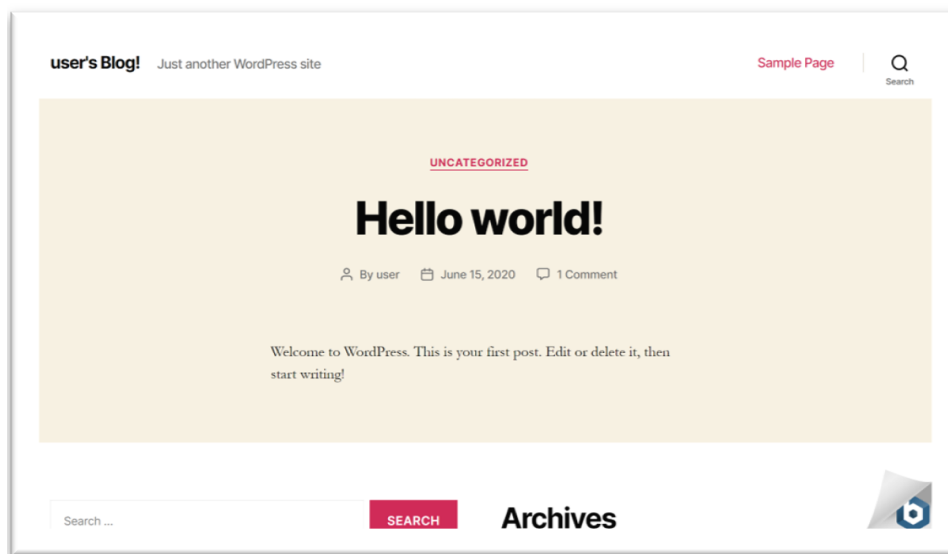


EXHIBIT 14: THE WEBSITE

To access the admin page going forward, we navigate to our instance’s IP address and add “\wp-admin”. For example, 123.1.10.1\wp-admin. The default username is “user” and the password was retrieved when initially connecting to the secure shell using the `cat bitnami_application_password` command as shown on the previous page.

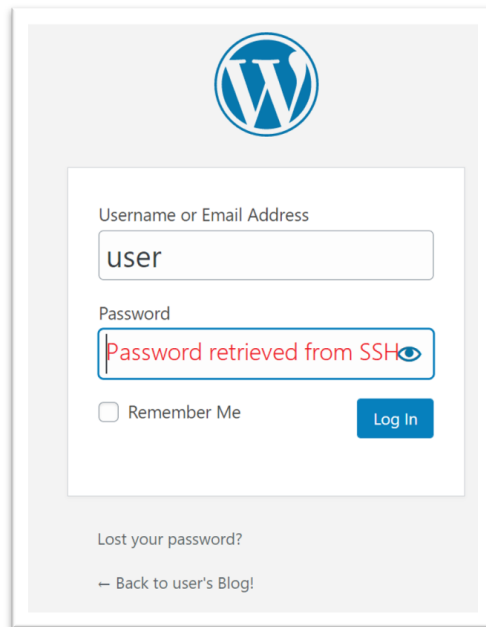


EXHIBIT 15: ACCESS THE ADMIN PAGE

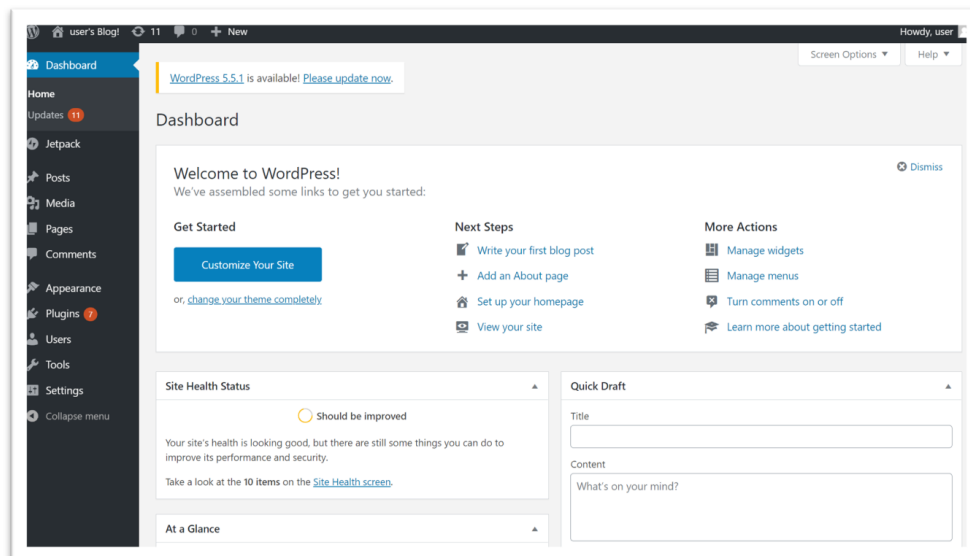


EXHIBIT 16: DASHBOARD

This area is where we can now create and configure our new website using the simple WordPress interface. We can do everything here from installing plugins to choosing themes for the website to using an existing backup template.

Overall, Amazon Lightsail provides a quick, easy, cost-effective solution for doing such things as creating a website for a small project, blogging, and creating testing environments. With pricing based on what is hosted versus outbound traffic, Lightsail provides users with virtual private servers with all the necessary components to build their own applications in the cloud without the need to estimate the costs of running these platforms in-house. Migrating to the cloud using AWS also gives small business owners the same opportunities to compete with their larger counterparts by providing the same access to technologies and services that would otherwise be very costly to run on-premises.

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