Marketplace Deployment Guide

Hammerspace 4.1.1

Amazon AWS

7/10/2019

Introduction

This guide details step by step instructions for deploying Hammerspace 4.1 in Amazon AWS Marketplace.

Solution Overview

Hammerspace is a set of software services that are deployed as virtual machines in order to manage data in a single global namespace.

The Hammerspace solution consists of the following main components:

Metadata Server (Anvil) deployed as a service and is responsible for managing all the metadata for the namespace.

Data Services (DSX) includes several different components:

1. **Portal** - Enables protocol access for NFS v3 and SMB clients. The portal is stateless except for SMB file locks that are maintained across portals.
2. **Mover** - The mover is stateless and runs on each DSX instance. It moves files non-disruptively between storage volumes within the global namespace.
3. **Cloud Connector -** The cloud connector provides connectivity to S3 compatible object storage and cloud storage from Amazon AWS, Microsoft Azure and Google Cloud Platform.
4. **Store -** The store service makes block storage available for use in the global namespace. Using DSX Store is a simple way to include local NVMe drives and block volumes in the global namespace.

Deploying Hammerspace in AWS Marketplace

This section describes how to deploy Hammerspace in AWS Marketplace. The existing solution supports deploying Hammerspace as a standalone server node. For deploying highly available pair of metadata server nodes, please contact Hammerspace at contact@hammerspace.com

Keep in mind that both the Hammerspace Server and the Data Services instances must be deployed for a complete installation with full functionality.

1. Go to AWS Marketplace. Search for Hammerspace and select the solution you want to deploy.

   Click on the solution you want to deploy. Currently there is only one Hammerspace solution listed in AWS Marketplace which requires purchasing a license through Hammerspace.

2. On the "Product Overview" screen, there is more information available for the solution.

   Note that several instance types have been qualified with Hammerspace. Which type you choose to use depends on what workload and the size of the environment it is serving. One great feature of Amazon AWS is that you can go in and change to a bigger/smaller version of the Instance Type later if you get it wrong.

   Hammerspace has set the default instance type to m4.xlarge.
   Other instance types recommended for use are:
   a. m4.2xlarge
   b. r4.2xlarge
   c. x1e.2xlarge
   d. h1.2xlarge

   You can estimate the costs for different instance type on the 'Pricing Information' screen.

3. Click on 'Continue to Subscribe'.

   Solutions deployed through Marketplace can be used for up to a month before requiring a valid license.
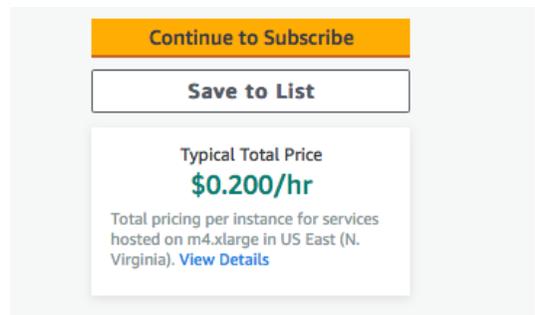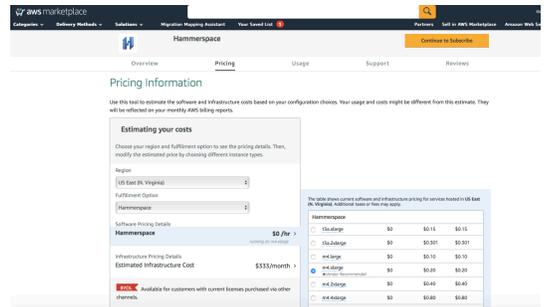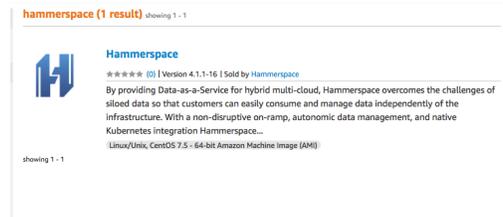
4. Subscribe to the software by accepting the terms of EULA, then click on 'Continue to Configuration' to go to the next screen.

Subscribe to this software

You're subscribed to this software. Please see the terms and pricing details below or click the button above to configure your software.

Terms and Conditions

Hammerspace Offer

You have subscribed to this software and agree that your use of this software is subject to the pricing terms and the seller's End User License Agreement (EULA). Your use of AWS services is subject to the AWS Customer Agreement.

Product	Effective Date	Expiration Date	Action
Hammerspace	7/11/2019	N/A	⌄ Show Details

5. Select the version you want to deploy and the region for deployment and then click on 'Continue to Launch'.

   On the next screen, choose 'Launch CloudFormation' under 'Choose Action' and then hit 'Launch'

Launch this software

Review your configuration and choose how you wish to launch the software.

Configuration Details

Fulfillment Option	Hammerspace Topology Diagram Hammerspace *running on m4.xlarge*
Software Version	4.1.1-16
Region	US East (N. Virginia)

Usage Instructions

Choose Action

Launch CloudFormation ⇕   Choose this action to launch your configuration through the AWS CloudFormation console.

Launch

6. To create a Hammerspace solution, choose a name for the stack and select 'Deployment type' as 'Create a new Hammerspace solution'. Specify the number of DSX instances to be created as part of the solution in 'DSX Instance Count'. Leave the 'Cluster IP' field blank for this selection. There are more details later on in the guide on how to fill in this field.

   Note that a minimum of 1 DSX instance needs to be created for a Hammerspace solution.

Specify stack details

Stack name

Stack name

mkpl-hs-test

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

Instances

Instance Type
Amazon EC2 instance type

m4.xlarge ▼

Features

Deployment Type
Deployment Type

Create a new Hammerspace solution ▼

Cluster IP
Internal IP of deployed Hammerspace solution (if adding DSX)

DSX Instance Count
Data Services (DSX) instance count

1

7. A boot disk and an additional data disk needs to be created for each Anvil and DSX. The boot disks sizes are non-configurable.

   Data disk sizes for Anvil and DSX nodes can specified in the 'Anvil Metadata Disk Size' and 'DSX Data Disk Size' fields respectively. If you want different data disk sizes for DSX nodes, create additional DSX nodes in a separate deployment. Please look at step 13 for more details on how to do that. The same applies to creating different nodes with different 'Instance types' as mentioned in the previous step.

   The minimum supported size for data disks is 100GB and the maximum supported size is 100TB.

Storage

Anvil Metadata Disk Size
Size of Anvil metadata disk in GB

200

DSX Data Disk Size
Size of DSX data disk in GB

200

Also note that the DSX comes in two configurations: with and without Data Store. If you don't want to configure the DSX as a Data Store, you can delete the storage provisioned by the initial deployment at a later time. Similarly, additional storage can be added to a DSX at any later time.

8. All instances created by the Hammerspace solution will be placed in the same placement group.

   Under 'Networking and Security', select network details according to your configuration.

   AWS Marketplace does not allow password authentication for SSH access. Instead, a key pair is used to securely access your Anvil instance using SSH. Choose an existing key pair or create a new key pair to allow SSH access.

   Note that if you don't add the key pair information in this step, you will not be able to add it later. In that case or to allow SSH access to additional users, you can add IAM users using the IAMAdminGroupUrl once the stack has been created.

   If you want to restrict access for the Anvil to a subset of hosts, add a list of IP addresses or subnets in the CIDR field. If allowing any host to access the Anvil, set this field to 0.0.0.0/0.

9. It is recommended to add tags to identify your deployments.

   If you don't have all the permissions needed to create the stack, you can provide access to CloudFormation to make those calls on your behalf. In that case use the 'Permissions' section to set the IAM role for CloudFormation to use.

   For the rest of the 'Advanced options', make any changes as needed for your setup.

10. Go over the details of the deployment and accept the disclaimer at the end, then click 'Create stack'.

    You will need to wait for about 5 minutes to allow the nodes and networking to be setup and all the nodes to come online.

11. Once the instances have been created, this is what you will see.

12. Click on the 'Outputs' tab at the top of the page to get information on the instances created.

    Follow the HTTPS link Management URL to login to the GUI as 'admin'. Use the provided "Management Instance ID" (starting with i-) as the password. If the "Management Instance ID" output is not present, find the Anvil Instance ID under the Resources tab.

    For SSH access, ssh in as ec2-user@<ManagementIP> using your key pair credentials to get admin CLI access. No password is requested. E.g.
    ssh -i "janedoe.pem" ec2-user@ManagementIp

13. OPTIONAL: Adding additional DSX nodes

    In order to add additional DSX Instances to an existing Hammerspace Solution, create a new Deployment by launching the Hammerspace Solution again in Marketplace. Make sure to choose the same zone for deployment.
    Choose 'Add Data Services (DSX) to a Hammerspace solution' from the 'Deployment Type' drop down menu.

    In order for the Anvil to discover the DSX, you need to specify the 'Internal IP' of the Anvil in the field 'Cluster IP'. Look at the details on the Deployment page and

search for the 'ManagementIP' listed. Add that IP in this field.

Specify the number of DSX nodes to be added to the Hammerspace Solution in the 'DSX instance count' field.

Follow the instructions for filling in the remaining fields as outlined earlier and click Deploy.

It is recommended to use tags on deployments that might be sharing a Hammerspace solution.

Once the stack gets created, the new DSX nodes will show up in the Anvil's UI and can be added as additional storage.
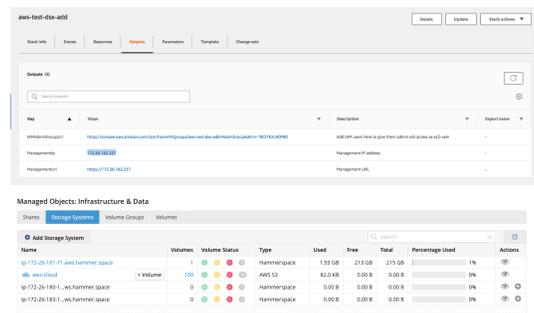
Now that you have successfully deployed a Hammerspace Server, please go over the 'Hammerspace Getting Started Guide' to setup and configure your Hammerspace Server. It only takes a few minutes...

LICENSING

Hammerspace requires a valid license to use the software. The installation should be activated using the command line interface. Without a license, the software will operate without warnings for 30 days.

Each customer is provided an account on the Delivery & License Portal where release images and documentation can be found and downloaded. Information about entitlements associated with the customer account are also available on this portal.

An entitlement e-mail is sent to the customer owner and lists one or more Activation IDs associated with each product when an entitlement is created, updated or renewed. It looks similar to this:

```
Subject: Entitlement ID(s): zzzz-yyyy-xxxx-wwww-vvvv-uuuu-tttt-ssss from
         Hammerspace

Dear <User>,

Below are the Entitlement ID(s) that you can use to activate the licenses you
recently purchased from Hammerspace under Sales Order ID: <Sales Order ID>.

These entitlements are granted to:
Org Name:      <Company Name>
Contact Name:  <Contact Name>
Contact Email: <user@customer_domain>

Subject to the terms of your purchase agreement with Hammerspace, you hereby have
the right to activate the following product license(s):

ActivationID: aaaa-bbbb-cccc-dddd-eeee-ffff-gggg-hhhh
Product Name: Hammerspace
Version: 4.1.1
Total Quantity: 2
Start Date: Mar 2, 2019
Expiration Date: Mar 1, 2020

Duration: 365 Days
```

ACTIVATING HAMMERSPACE LICENSES

To activate your Hammerspace licenses please refer to the entitlement email received from Hammerspace, note the ActivationID and follow the steps below. Please contact your Hammerspace representative if you did not receive an ActivationID.

1. Login to Hammerspace via ssh as an admin user.

2. Enter your ActivationID using the license-activate command:

```
admin@anvil> license-activate --activation-id aaaa-bbbb-cccc-dddd-eeee-ffff-gggg-hhhh
```

3. Validate Hammerspace licenses using the cluster-view command:

```
admin@anvil1.local> cluster-view
ID:                         3aedcc9e-21d6-42f4-8d6f-66150f6a645c
Name:                       HS242010A8A0FC2
State:                      Standalone
IP:                         10.
```

```
8.15.194/32
Cluster floating IPs:              [10.138.15.194/32]
Portal floating IPs:               []
Since:                             2019-03-01 17:35:31 UTC
Timezone:                          UTC
VVOL support:                      true
```

EULA accepted date: **2019-03-01 17:36:28 UTC**
Online activation support: **true**
Activation ID: **aaaa-bbbb-cccc-dddd-eeee-ffff-gggg-hhhh**
License activation date: **2019-03-01 00:00:00 UTC**
License details:
         Name: **DataSphere_Enterprise**
         Status: **VALID**
         Expiration: **2020-03-01 23:59:59 UTC**
         Number of acquired licenses: 1

LICENSE TROUBLESHOOTING

If you attempt to use a license that the Hammerspace is already using, you will see similar results to those shown below:

```
admin@anvil> license-activate --activation-id aaaa-bbbb-cccc-dddd-eeee-ffff-gggg-hhhh
license-activate: Already licensed with aaaa-bbbb-cccc-dddd-eeee-ffff-gggg-hhhh on
2019-03-01 00:00:00 UTC
```

If you attempt to use an already expired license, you will see similar results to those shown below:

```
admin@anvil> license-activate --activation-id aaaa-bbbb-cccc-dddd-eeee-ffff-gggg-hhhh
license-activate: License activation failed, The activation ID was denied, All
features of entitlement, aaaa-bbbb-cccc-dddd-eeee-ffff-gggg-hhhh, are expired.
```

If you attempt to use a license with the wrong format, you will see similar results to those shown below:

```
admin@anvil> license-activate --activation-id 1234
license-activate: activationId invalid activation-id format
Try 'license-activate --help' for more information.
```