ESS Linux Sys Admin - Guide to running ESS from the AWS AMI

(10/23/2014)

Introduction

The purpose of this document is to provide Linux system administrators with information on how the Expense Submittal System (ESS) performs necessary system related tasks and how to access ESS in the event that they need to take corrective action. Although this documents assumes that ESS has been installed with the AWS AMI, most of it is applicable to any Linux installation. We will cover:

- Accessing the ESS instance on AWS.
- Creating an AMI backup.
- Maintaining the ESS firewall on AWS.
- Accessing the ESS server via PuTTY/SSH.
- Stopping and starting the ESS server.
- The ESS backup via the *cron* job.
- Restoring ESS from the SQL Backup.
- ESS log rotation.
- Maintaining the security.xml file.

In addition to these tasks, you may also want to consult the "Getting the most from ESS" document. That document describes how ESS can be configured to be optimized for your environment.

ESS on AWS

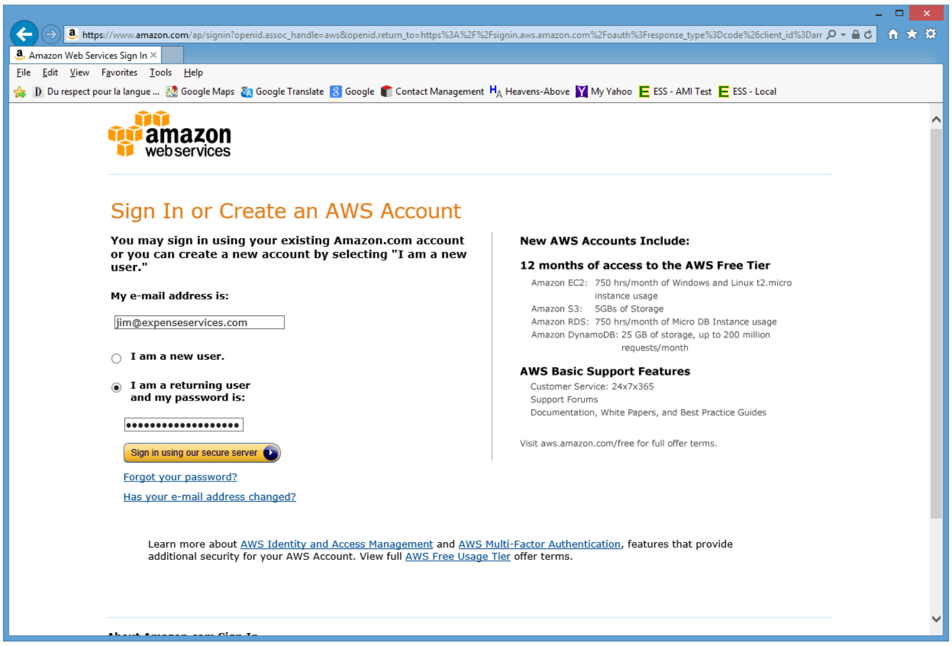
ESS is run as an EC2 instance on the Amazon Cloud. EC2 stands for Elastic Compute Cloud which means that it is easy to start, stop and terminate virtual servers according to your needs. With ESS, however, once it is up and running you will never (almost never) want to stop or terminate the instance. If you do, you'll probably lose data which is a bad thing.

Occasionally you'll need access the EC2 server for other tasks. These include:

- Making a backup of the whole server. You'll probably do this when you have re-configured something or prior making any significant change or upgrade.
- Change the firewall for SSH access. SSH ports should be restricted to specific IP address to prevent various hack attacks. If you need to access the ESS server from a new location you'll need to open and close a port for access.

To access AWS, with your browser goto: ***http://aws.amazon.com***

Select ***Sign In*** and then ***AWS Management Console***


https://www.amazon.com/ap/signin?openid.assoc_handle=aws&openid.return_to=https%3A%2F%2Fsignin.aws.amazon.com%2Foauth%3Fresponse_type%3Dcode%26client_id%3Darr
Amazon Web Services Sign In
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Du respect pour la langue ... Google Maps Google Translate Google Contact Management Heavens-Above My Yahoo ESS - AMI Test ESS - Local
amazon web services

Sign In or Create an AWS Account

You may sign in using your existing Amazon.com account or you can create a new account by selecting "I am a new user."

My e-mail address is:

jim@expenseservices.com

○ **I am a new user.**

● **I am a returning user and my password is:**

•••••••••••••••••••

Sign in using our secure server

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Has your e-mail address changed?

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Amazon EC2:	750 hrs/month of Windows and Linux t2.micro instance usage
Amazon S3:	5GBs of Storage
Amazon RDS:	750 hrs/month of Micro DB Instance usage
Amazon DynamoDB:	25 GB of storage, up to 200 million requests/month

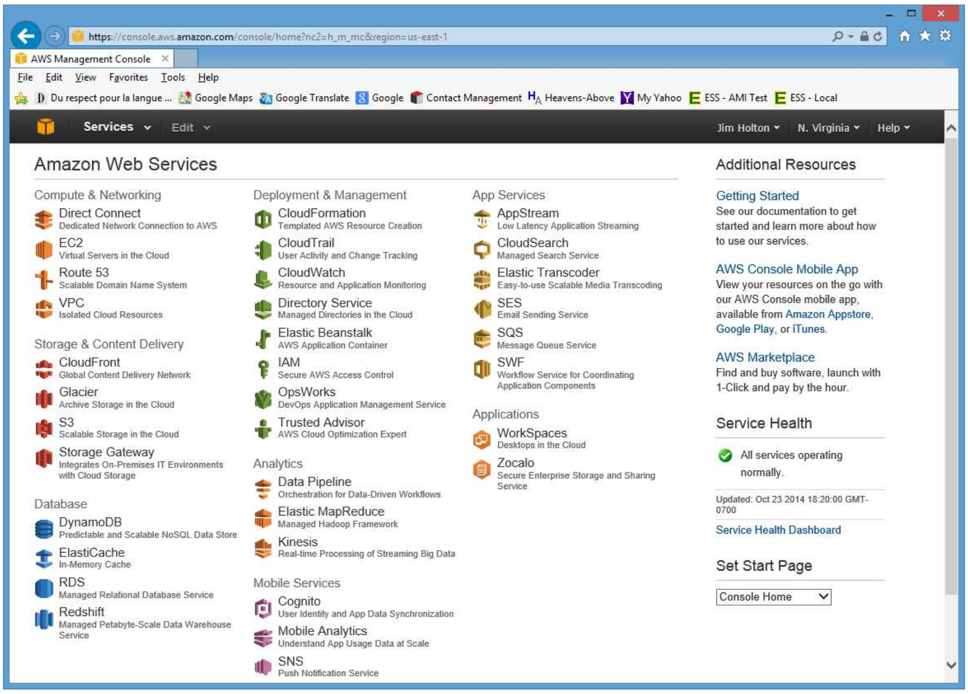
AWS Basic Support Features

Customer Service: 24x7x365
Support Forums
Documentation, White Papers, and Best Practice Guides

Visit aws.amazon.com/free for full offer terms.

Learn more about AWS Identity and Access Management and AWS Multi-Factor Authentication, features that provide additional security for your AWS Account. View full AWS Free Usage Tier offer terms.

Enter your email address and your AWS password and then use the sign in button.


https://console.aws.amazon.com/console/home?nc2=h_m_mc&region=us-east-1
AWS Management Console
File Edit View Favorites Tools Help
Du respect pour la langue ... Google Maps Google Translate Google Contact Management Heavens-Above My Yahoo ESS - AMI Test ESS - Local
Services
Edit
Jim Holton
N. Virginia
Help

Amazon Web Services

Compute & Networking

- Direct Connect
  Dedicated Network Connection to AWS
- EC2
  Virtual Servers in the Cloud
- Route 53
  Scalable Domain Name System
- VPC
  Isolated Cloud Resources

Storage & Content Delivery

- CloudFront
  Global Content Delivery Network
- Glacier
  Archive Storage in the Cloud
- S3
  Scalable Storage in the Cloud
- Storage Gateway
  Integrates On-Premises IT Environments with Cloud Storage

Database

- DynamoDB
  Predictable and Scalable NoSQL Data Store
- ElastiCache
  In-Memory Cache
- RDS
  Managed Relational Database Service
- Redshift
  Managed Petabyte-Scale Data Warehouse Service

Deployment & Management

- CloudFormation
  Templated AWS Resource Creation
- CloudTrail
  User Activity and Change Tracking
- CloudWatch
  Resource and Application Monitoring
- Directory Service
  Managed Directories in the Cloud
- Elastic Beanstalk
  AWS Application Container
- IAM
  Secure AWS Access Control
- OpsWorks
  DevOps Application Management Service
- Trusted Advisor
  AWS Cloud Optimization Expert

Analytics

- Data Pipeline
  Orchestration for Data-Driven Workflows
- Elastic MapReduce
  Managed Hadoop Framework
- Kinesis
  Real-time Processing of Streaming Big Data

Mobile Services

- Cognito
  User Identity and App Data Synchronization
- Mobile Analytics
  Understand App Usage Data at Scale
- SNS
  Push Notification Service

App Services

- AppStream
  Low Latency Application Streaming
- CloudSearch
  Managed Search Service
- Elastic Transcoder
  Easy-to-use Scalable Media Transcoding
- SES
  Email Sending Service
- SQS
  Message Queue Service
- SWF
  Workflow Service for Coordinating Application Components

Applications

- WorkSpaces
  Desktops in the Cloud
- Zocalo
  Secure Enterprise Storage and Sharing Service

Additional Resources

Getting Started
See our documentation to get started and learn more about how to use our services.

AWS Console Mobile App
View your resources on the go with our AWS Console mobile app, available from Amazon Appstore, Google Play, or iTunes.

AWS Marketplace
Find and buy software, launch with 1-Click and pay by the hour.

Service Health

✓ All services operating normally.

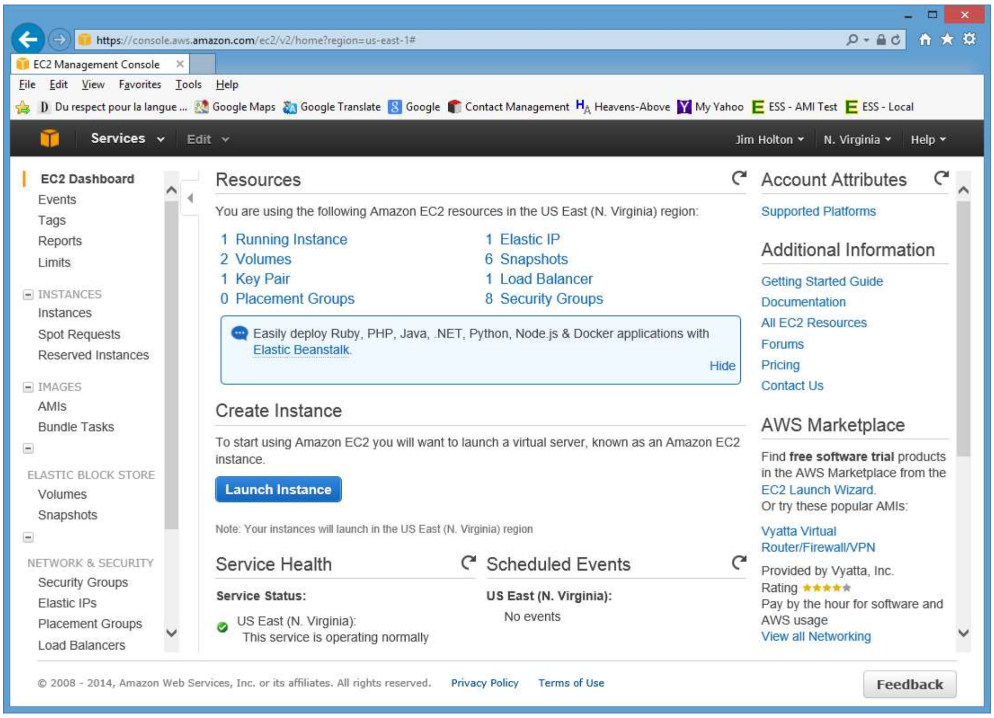
Updated: Oct 23 2014 18:20:00 GMT-0700

Service Health Dashboard

Set Start Page

Console Home

On the upper left-side of the browser screen select the EC2 option. This will take you to the EC2 home screen.



Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) region:

1 Running Instance	1 Elastic IP
2 Volumes	6 Snapshots
1 Key Pair	1 Load Balancer
0 Placement Groups	8 Security Groups

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Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Note: Your instances will launch in the US East (N. Virginia) region

Service Health

Service Status:

US East (N. Virginia):
This service is operating normally

Scheduled Events

US East (N. Virginia):
No events

Account Attributes

Supported Platforms

Additional Information

Getting Started Guide
Documentation
All EC2 Resources
Forums
Pricing
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AWS Marketplace

Find **free software trial** products in the AWS Marketplace from the EC2 Launch Wizard.
Or try these popular AMIs:

Vyatta Virtual Router/Firewall/VPN
Provided by Vyatta, Inc.
Rating ★★★★★
Pay by the hour for software and AWS usage
View all Networking

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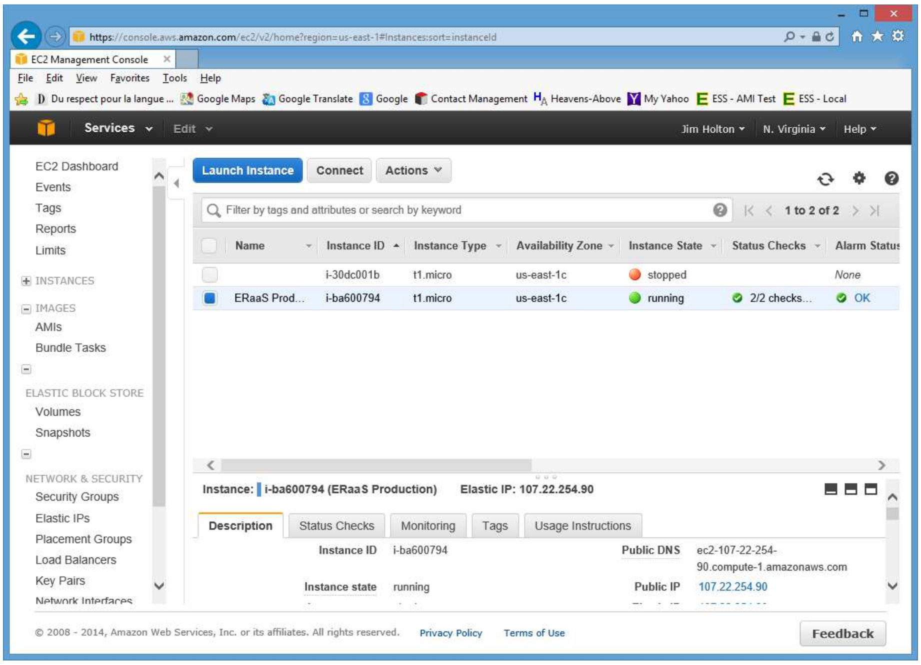
The menu on the right will let you create AMI backups and modify the firewall.

Create an AMI Backup

An Amazon Machine Image is a complete backup of an EC2 instance. This is accomplished by taking a "snapshot" of the EC2 instance and storing it along with the AMI which are the automated installation instructions. In the event that your ESS instance should crash, you can return to the lastest AMI that you created and start ESS from that point. You can then follow the restore procedures below.

To create an AMI, select the Instances option from the menu and then select the instance from which you want to create the AMI.

Highlight the instance you want by clicking the box to on the left-side of the line.


https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:sort=instanceId
EC2 Management Console
File Edit View Favorites Tools Help
Du respect pour la langue ... Google Maps Google Translate Google Contact Management Heavens-Above My Yahoo ESS - AMI Test ESS - Local
Services Edit
Jim Holton N. Virginia Help
EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Load Balancers
Key Pairs
Network Interfaces
Launch Instance
Connect
Actions
Filter by tags and attributes or search by keyword
1 to 2 of 2
Description
Status Checks
Monitoring
Tags
Usage Instructions
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Feedback

	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status
□		i-30dc001b	t1.micro	us-east-1c	stopped		None
■	ERaaS Prod...	i-ba600794	t1.micro	us-east-1c	running	2/2 checks...	OK

Instance: i-ba600794 (ERaaS Production) Elastic IP: 107.22.254.90

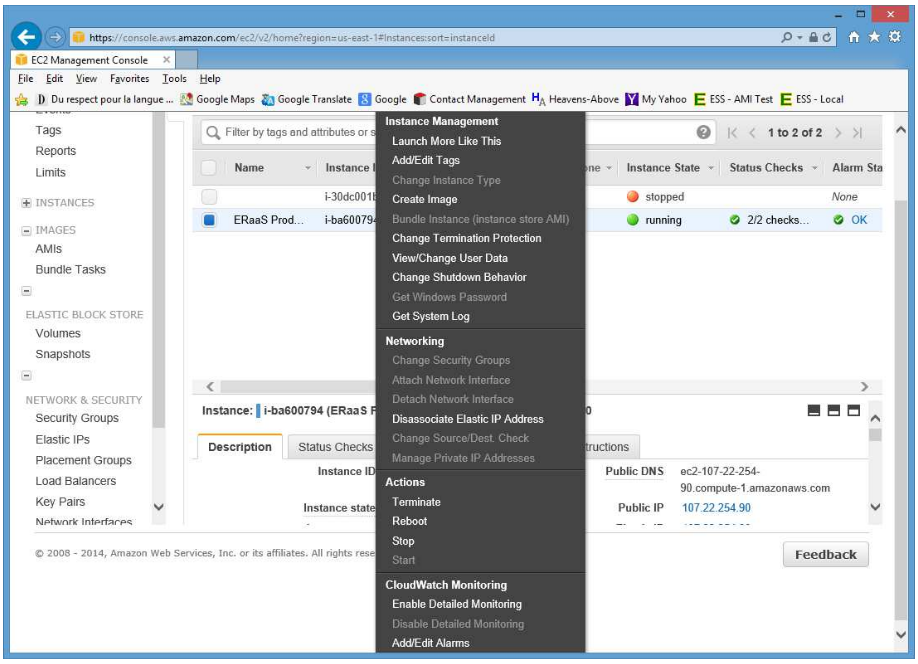
Instance ID i-ba600794

Public DNS ec2-107-22-254-90.compute-1.amazonaws.com

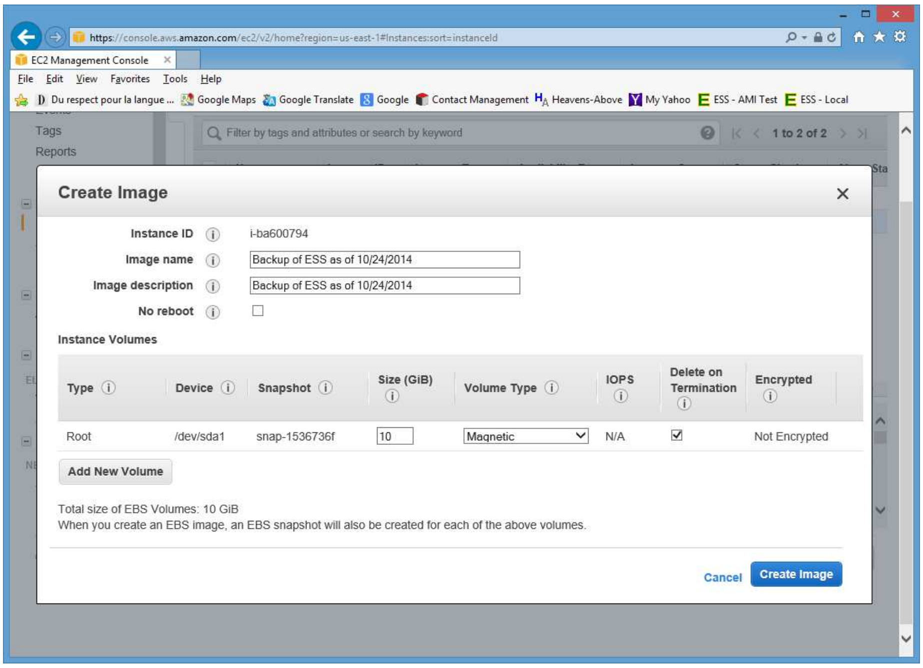
Instance state running

Public IP 107.22.254.90

Click the ***Actions*** at the top. Then in the drop-down menu, select the ***Create Image*** option.



File in the ***Image name*** and *Image description* fields with some identifying information. If you have experience with AWS, there are other fields that you can use instead of the default, however, the defaults will suffice for ESS.


https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:sort=instanceId
EC2 Management Console
File Edit View Favorites Tools Help
Du respect pour la langue ... Google Maps Google Translate Google Contact Management Heavens-Above My Yahoo ESS - AMI Test ESS - Local
Tags
Reports
Filter by tags and attributes or search by keyword
1 to 2 of 2

Create Image

Instance ID: i-ba600794

Image name: Backup of ESS as of 10/24/2014

Image description: Backup of ESS as of 10/24/2014

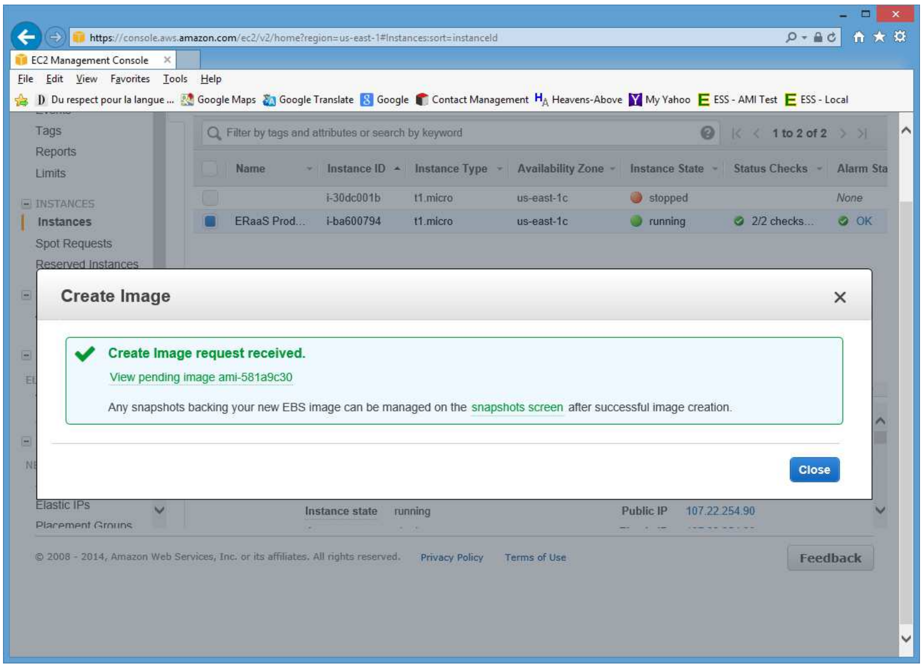
No reboot ☐

Instance Volumes

Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Delete on Termination	Encrypted
Root	/dev/sda1	snap-1536736f	10	Magnetic	N/A	☑	Not Encrypted

Total size of EBS Volumes: 10 GiB
When you create an EBS image, an EBS snapshot will also be created for each of the above volumes.

After you have clicked the Create Image button, AWS will tell you that it is creating the AMI. AMI creation can take several minutes.


https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:sort=instanceId
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Tags
Reports
Limits
INSTANCES
Instances
Spot Requests
Reserved Instances
Elastic IPs
Placement Groups
Filter by tags and attributes or search by keyword
1 to 2 of 2

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Sta
	i-30dc001b	t1.micro	us-east-1c	stopped		None
ERaaS Prod...	i-ba600794	t1.micro	us-east-1c	running	2/2 checks...	OK

Create Image

✓ Create Image request received.

View pending image ami-581a9c30

Any snapshots backing your new EBS image can be managed on the snapshots screen after successful image creation.

Close
Instance state running
Public IP 107.22.254.90
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Feedback

You can look at the AMI's that you have created by select the AMIs option on the left-side of the screen. From time to time, you may wish to delete old AMI's that are no longer meaningful to any restorations that you might do. When you delete an AMI, you will need to delete the associated Snapshot. You can associate an AMI to a Snapshot with the AMI-ID. The AMI-ID number will appear in the Snapshots description column.

Accessing the ESS Server

To perform basic housekeeping on ESS, you need to access the server with and SSH terminal emulator (client) such SHH (Apple, Linux) or PuTTY. Usage of these cleints is beyond the scope of this document.

ESS on AWS is always setup to require a private encryption key for access. To use your client to access ESS you will need to acquire this key. This key can only be downloaded as part of the key pair creation process as a ***.pem*** file. Contact the person who created the key pair for this key.

If ESS has been install with the ESS AMI, the default user is ***ec2-user***. Normally you will be required to supply a passphrase when you login. You will have either created this yourself from the private key or have gotten it from the person who provided you with the key.

Start and Stopping ESS

From time to time, you may want to start and stop that ESS services. You might want to do this if there is a service crash, to perform maintenance, or push in changes.

Once you are logged onto ESS as *ec2-user* with a client, starting or stopping ESS is easy. To stop ESS type:

```
sudo /var/ess/application/scripts/shutdown.sh
```

To start ESS, type this:

```
sudo /var/ess/application/scripts/startup.sh
```

The *restart.sh* script will perform both actions.

ESS Backup and Crontab

The ESS instance, like most Linux installation, has a utility call Crontab. Crontab allows jobs (e.g. scripts) to be run at scheduled intervals. ESS takes advantage this to perform a daily backup. To do this, we've install ***ess*** as a script in ***/etc/cron.daily***.

You may want to make the following changes:

- Change the time when it runs. Depending on the time zone that the bulk of your users are in, you may want to adjust the time when the script runs. To adjust the time, you will want to edit the */etc/anacrontab* file and adjust the *START_HOURS_RANGE*.
- Change what is being done. The /etc/cron.daily/ess file script:
    - Removes Tomcat logs beyond 30 days
    - Removes Incoming message beyond 14 days
    - Performs the database backup via ***/var/ess/scripts/dbdump.sh***
- The *dbdump.sh* script performs a database dump (*essBackup.sql*) and register file zip (*xmlr.zip*) as the nightly backup to the */var/ess/backup* folder. You might want to add other actions. The *dbdump.sh* script comes with *scp* command for sending the file to a backup server commented out. You will need to supply the correct private key and login/server address. Moving the the 2 backup files to an offline environment is recommended.

Note: If you backup ESS to a remote server, you'll most likely use a private key that doesn't have a passphrase. Treat the passcode securely. Anyone that has access to that passphrase

Restoring ESS from SQL Backup

In the event that you need to ever restore the ESS instance you should:

- If necessary, recreate the ESS instance from the latest AMI Backup. Use the Launch option in the AWS instance screen
- Execute the *essBackup.sql* file - to do this you need to log into MySQL and execute the essBackup.sql file:
    1. Get the MySQL root password. You can do this by *sudo*ing to root and displaying the */var/ess/xmls/.dbcode* file with *sudo cat.*
    2. At the Linux prompt : *mysql -u root -p ess*
    3. Enter the code from the *.dbcode* file as the password.
    4. At the MySQL Prompt: \. *{path}/essBackup.sql*
- Restore the *xmlr.zip* file by unzipping it to the */var/ess/xmlr* folder.

This will restore ESS as of you last backup date and time.

ESS Log Rotation

The ESS are rotated based upon size. The rotation is handled by the logrotate Linux task. TheESS logs are rotated as defined in */etc/logrotate.d/ess* file:

```
/var/ess/expense.log {
   compress
   delaycompress
   rotate 7
   daily
   size 2M
   prerotate
     /etc/init.d/tomcat7 stop >/dev/null
   endscript
   postrotate
     /etc/init.d/tomcat7 start >/dev/null
   endscript
}

/var/log/tomcat7/tomcat7-initd.log {
   missingok
   compress
   delaycompress
   rotate 7
   daily
   size 1M
   prerotate
     /etc/init.d/tomcat7 stop >/dev/null
   endscript
   postrotate
     /etc/init.d/tomcat7 start >/dev/null
   endscript
}
```

This script basically keeps the last seven logs that have reach the designated size. The archived logs are stored in the same folder as the original.

Maintaining the ESS security file

The ESS security file (/var/ess/xmls/security.xml) is used to provide access to certain functions that cannot be provided in the administration module. The most common reason is to provide audit personnel with access to the correct audit menu. To do this, you need to edit the *<audit>* element in the file. Add the user and the menu that they should get. The full audit menu is *backroom8.html*. This what the default <audit> element looks like:

```
<audit>
  <user>
    <email>admin@expenseservices.com</email>
    <menu>backroom8.html</menu>
  </user>
  <user>
    <email>auditor@expenseservices.com</email>
    <menu>backroom8.html</menu>
  </user>
  <user>
    <email>backup@expenseservices.com</email>
    <menu>backroom8.html</menu>
  </user>
</audit>
```

To give an auditor access to the full menu, copy a *<user>* element, add it, and change the *<email>* element to the auditor's.

###