

Cloud platform Amazon



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Course:
Grid, Clusters and Cloud
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Amazon WS?

- Amazon Web Services (AWS) provides on-demand computing resources and services in the cloud, with pay-as-you-go pricing
 - Run a server on AWS that you can log on to, configure, secure, and you pay only for what you use

How is using AWS?



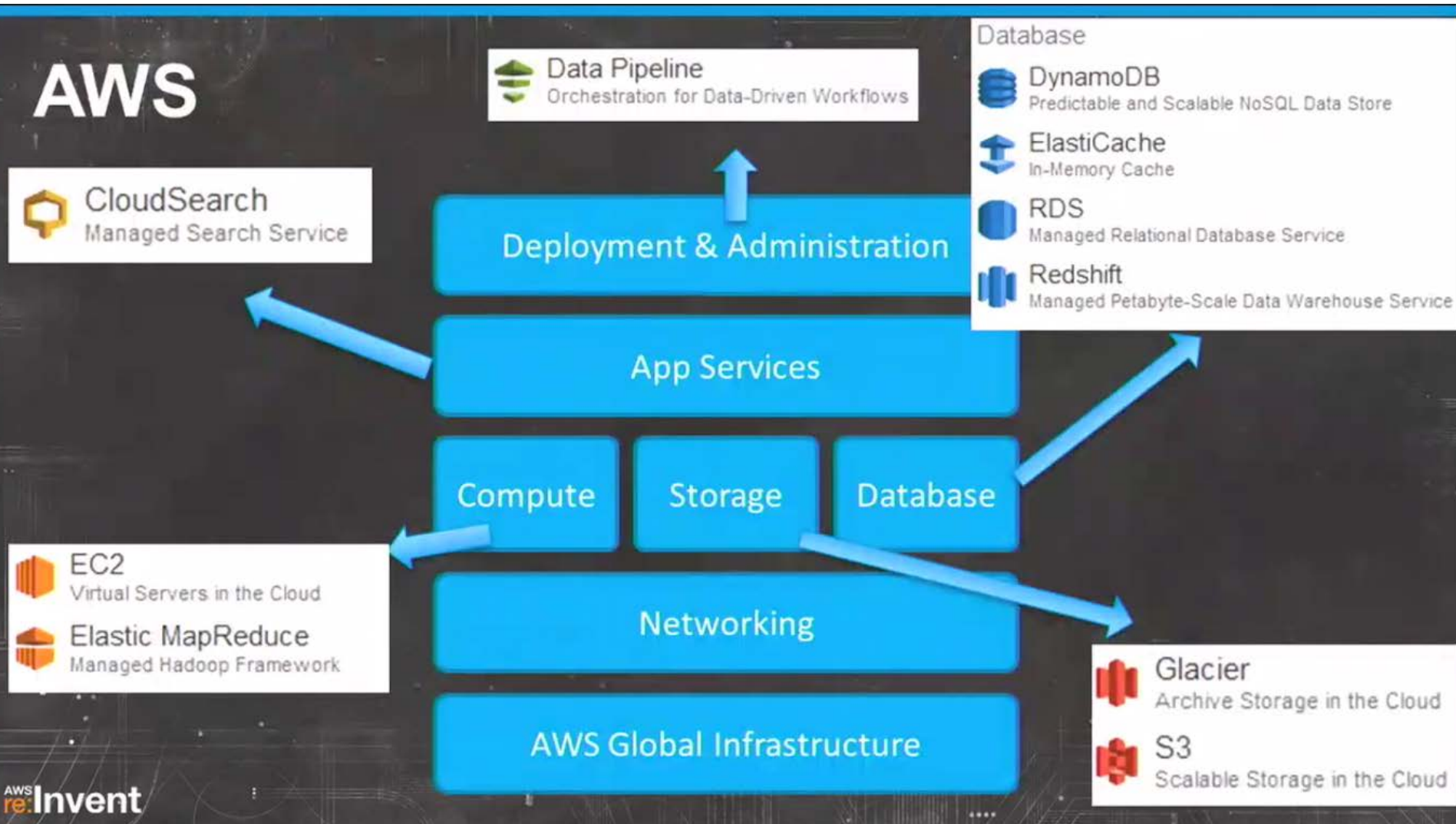
What can you do with AWS?

- You can use AWS to make it easier to build and manage your websites and applications
 - Store public or private data, Host a static and dynamic websites, Process, analyze and compute business and scientific data, Handle peak load, etc

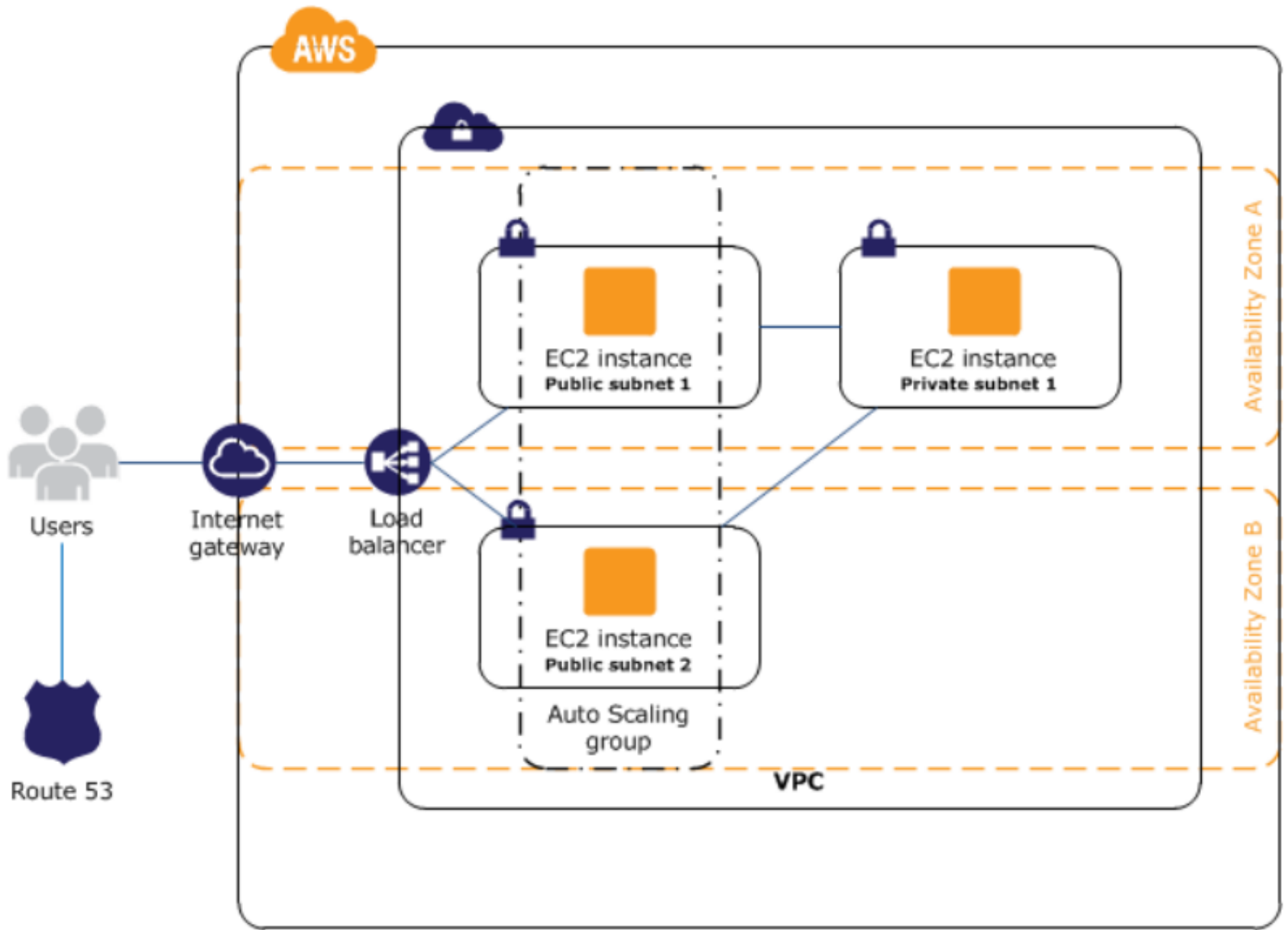
AWS Security

- The access to AWS network and data centers is strictly controlled, monitored, and audited
 - Apply ACL-type permissions on your data and can also use encryption of data at rest
 - Set up a virtual private cloud (VPC), logically isolated from other virtual networks in the AWS cloud
 - Set up a security group, which acts as a virtual firewall to control the inbound and outbound traffic for your virtual servers
 - Specify a key pair when you launch your virtual server, which is used to encrypt your login information

AWS Product categories

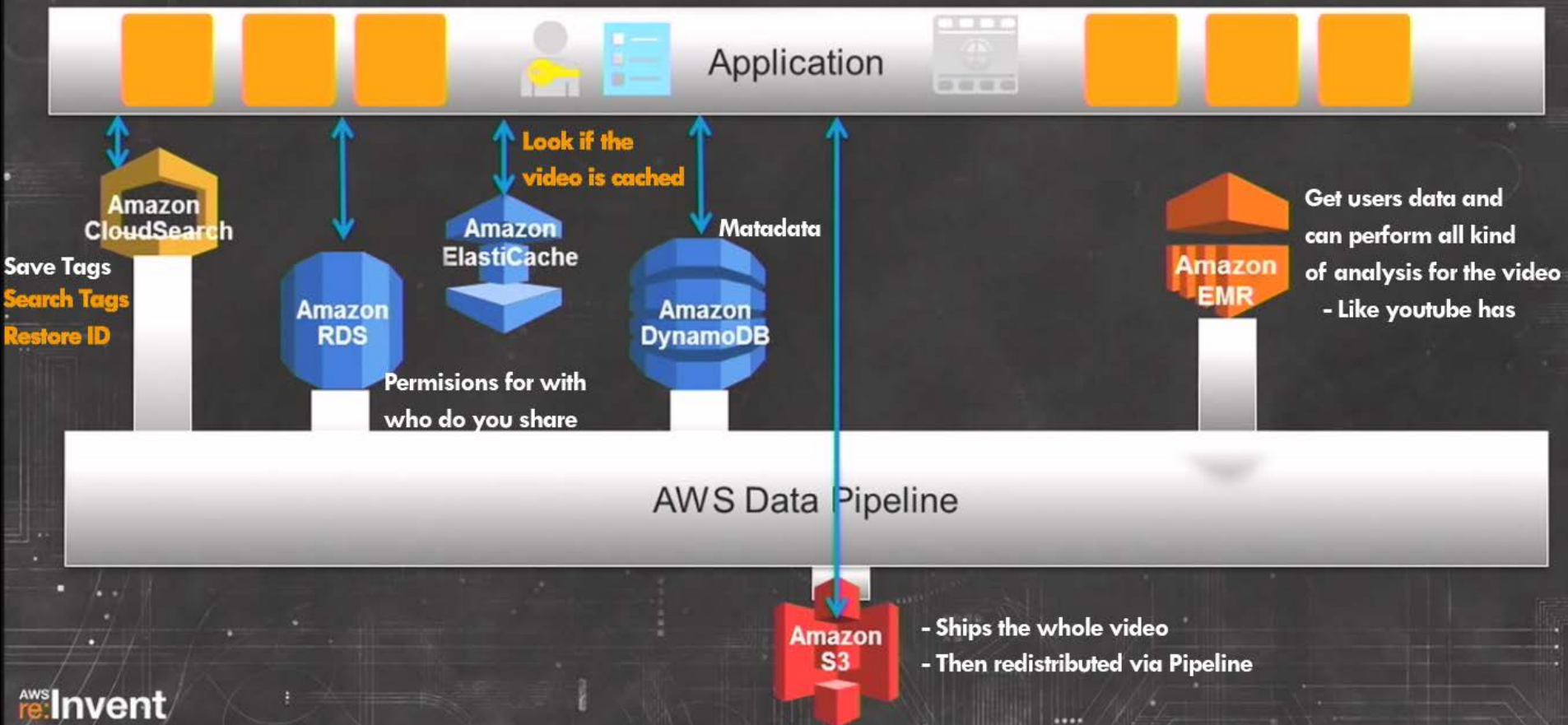


AWS Architecture



How it works?

A Video Streaming App – Discovery, Upload



AWS deployment

The screenshot displays the AWS RDS console interface. The left sidebar shows the navigation menu with 'Security Groups' highlighted. The main content area shows the details for a DB instance named 'testdbinstance'. The instance is in a 'modifying' status. The endpoint is 'testdbinstance.cxjeficnshj7.us-west-1.rds.amazonaws.com:3306 (authorized)'. The configuration details include: Engine: mysql (5.6.19), Created Time: September 21, 2014 5:54:40 PM UTC-4, DB Name: users, Username: testuser, Option Group(s): default:mysql-5-6 (in-sync), and Parameter Group: default:mysql5.6 (in-sync). The security and network details include: Availability Zone: us-west-1b, VPC ID: vpc-99e40cfc, Subnet Group: default (Complete), Publicly Accessible: Yes, Subnets: subnet-79cbf33f and subnet-be4cb4db, Security Groups: default (sg-bfb175da) (removing) and DB-Security-Group (sg-50bf7b35) (adding), and Port: 3306. The instance and IOPS details include: Instance Class: db.t2.micro, IOPS: disabled, and Storage: 5GB. The availability and durability details include: DB Instance Status: modifying, Multi AZ: No, Automated Backups: Enabled (1 Day), Latest Restore Time: September 21, 2014 5:55:38 PM UTC-4. The maintenance details include: Auto Minor Version Upgrade: Yes, Maintenance Window: wed:13:03-wed:13:33, and Backup Window: 06:29-06:59.

EC2 Management Con... Bookmarks

Services Edit

AWS_Like_a_PRO @ tisaws N. California Help

RDS Dashboard

Instances

Reserved Purchases

Snapshots

Security Groups

Parameter Groups

Option Groups

Subnet Groups

Events

Event Subscriptions

Launch DB Instance Show Monitoring Instance Actions

Filter: All Instances Search DB Instances...

Viewing 1 of 1 DB Instances

DB Instance	VPC ID	Multi-AZ	Class	Status	Storage	Security Groups	Engine	Zone
testdbinstance	vpc-99e40cfc	No	db.t2.micro	modifying	5 GB	default (removing), DB-Security-Group (adding)	mysql	us-west-1

Endpoint: testdbinstance.cxjeficnshj7.us-west-1.rds.amazonaws.com:3306 (authorized)

Configuration Details

Engine: mysql (5.6.19)
Created Time: September 21, 2014 5:54:40 PM UTC-4
DB Name: users
Username: testuser
Option Group(s): default:mysql-5-6 (in-sync)
Parameter Group: default:mysql5.6 (in-sync)

Security and Network

Availability Zone: us-west-1b
VPC ID: vpc-99e40cfc
Subnet Group: default (Complete)
Publicly Accessible: Yes
Subnets: subnet-79cbf33f, subnet-be4cb4db
Security Groups: default (sg-bfb175da) (removing), DB-Security-Group (sg-50bf7b35) (adding)
Port: 3306

Instance and IOPS

Instance Class: db.t2.micro
IOPS: disabled
Storage: 5GB

Availability and Durability

DB Instance Status: modifying
Multi AZ: No
Automated Backups: Enabled (1 Day)
Latest Restore Time: September 21, 2014 5:55:38 PM UTC-4

Maintenance Details

Auto Minor Version Upgrade: Yes
Maintenance Window: wed:13:03-wed:13:33
Backup Window: 06:29-06:59

Instance Actions Events Tags Logs

AWS deployment

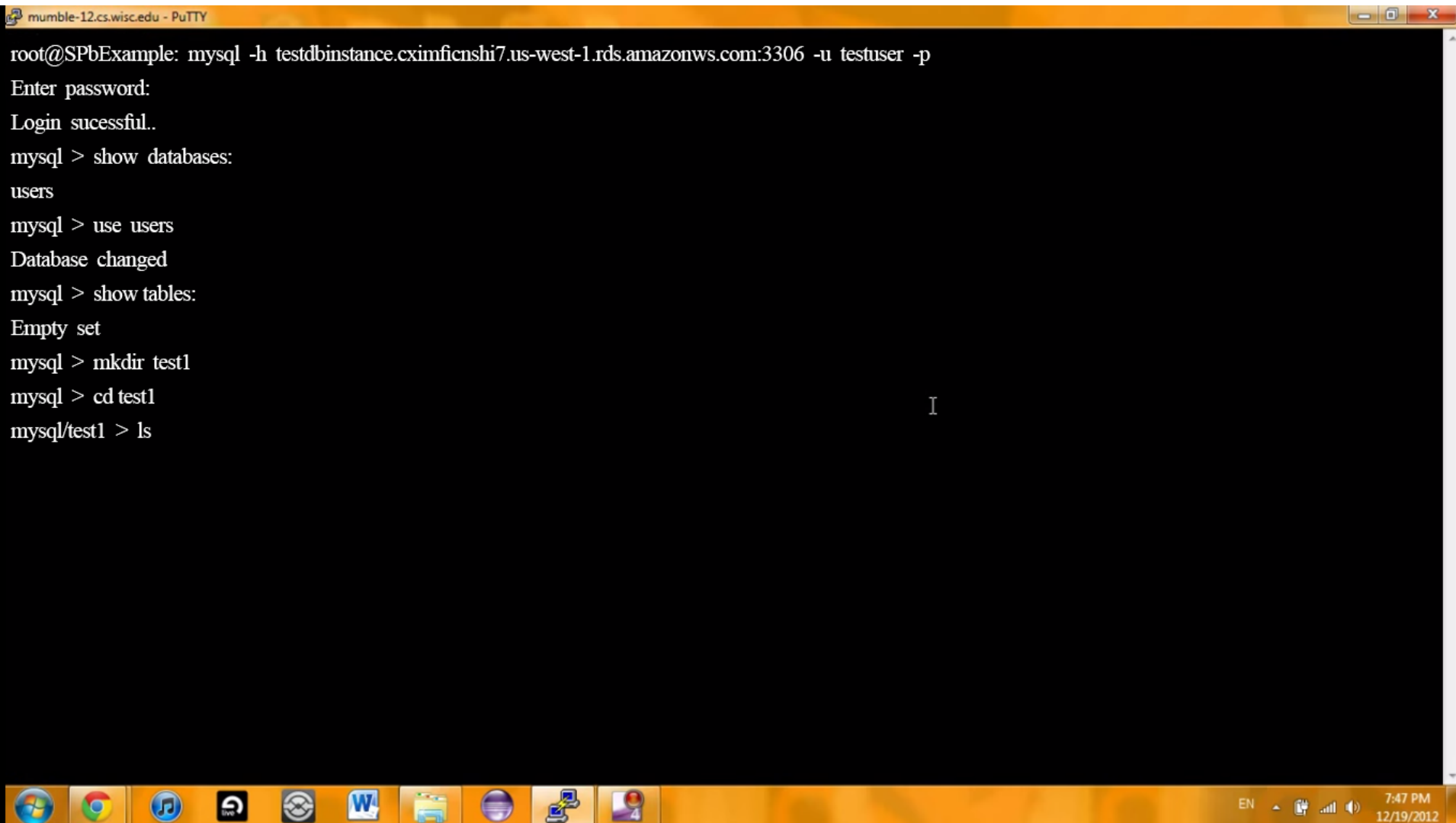
The screenshot displays the AWS Management Console interface for creating a new security group. The browser address bar shows the URL: <https://console.aws.amazon.com/ec2/v2/home?region=us-west-1#SecurityGroups:>. The console header includes the 'EC2 Management Console' and 'Services' menu. The left sidebar lists various AWS services, with 'Security Groups' highlighted under the 'NETWORK & SECURITY' section. The main content area shows a list of existing security groups, with a 'Create Security Group' button. A modal dialog titled 'Create Security Group' is open, allowing the user to configure a new security group. The dialog fields are as follows:

- Security group name:** DB-Security-Group
- Description:** MySQL
- VPC:** vpc-99e40cfc (172.31.0.0/16) | Default VPC *

Below these fields, the 'Security group rules' section is visible, with the 'Inbound' tab selected. The rules table has the following columns: Type, Protocol, Port Range, and Source. A 'Custom TCP Rule' is selected, and a dropdown menu is open showing various protocols: All TCP, All UDP, All ICMP, All Protocol, All traffic, SSH, SMTP, DNS, HTTP, POP3, IMAP, LDAP, HTTPS, SMTPS, IMAPS, POP3S, and MySQL. The 'Source' dropdown is also open, showing 'Anywhere', 'My IP', and 'Custom IP'.

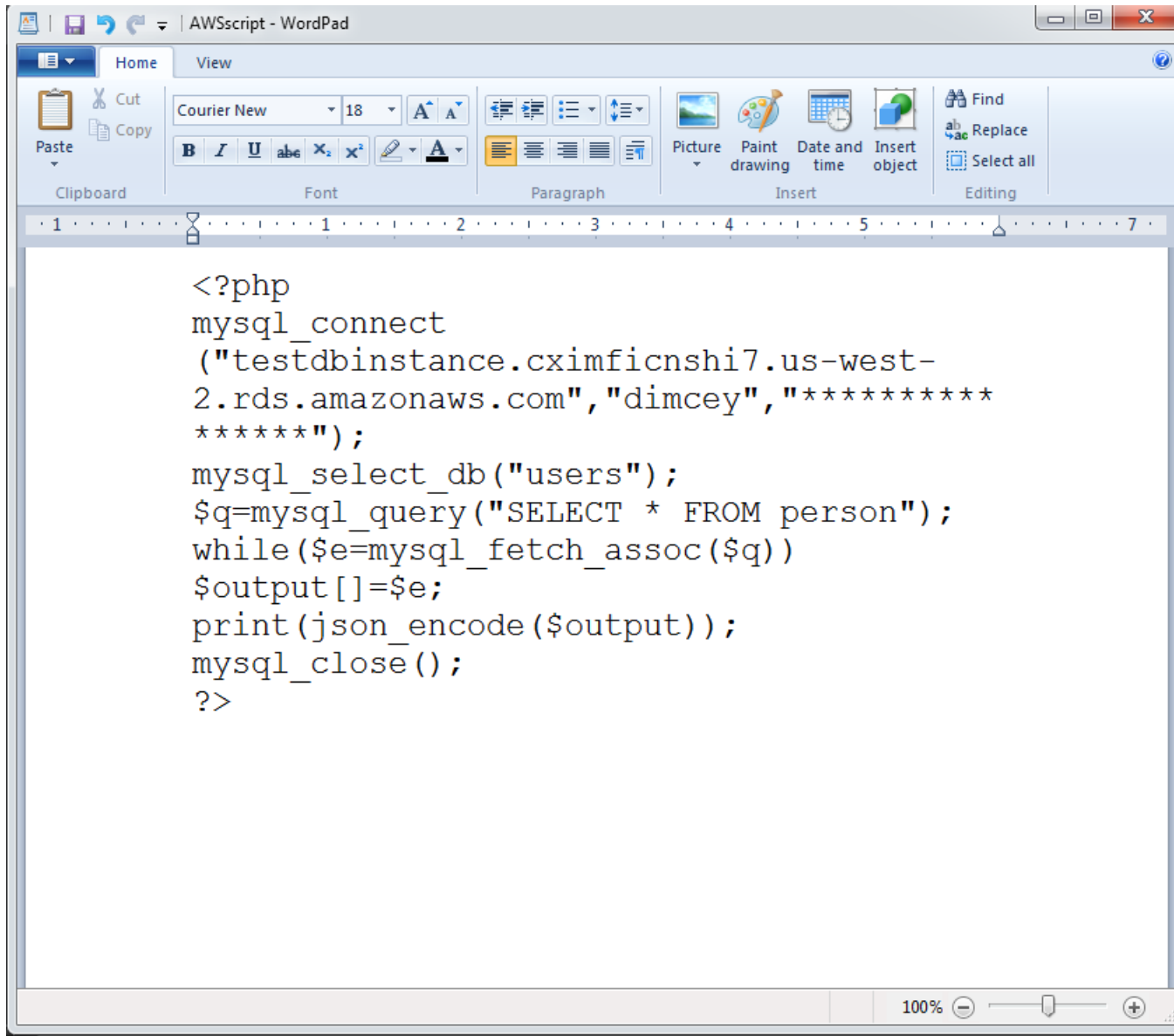
At the bottom of the dialog, there are 'Cancel' and 'Create' buttons. The footer of the console shows the copyright notice: © 2008 - 2014, Amazon Web Services, Inc. or its affiliates. All rights reserved.

AWS deployment



```
mumble-12.cs.wisc.edu - PuTTY
root@SPbExample: mysql -h testdbinstance.cximfcns7.us-west-1.rds.amazonaws.com:3306 -u testuser -p
Enter password:
Login successful..
mysql > show databases:
users
mysql > use users
Database changed
mysql > show tables:
Empty set
mysql > mkdir test1
mysql > cd test1
mysql/test1 > ls
```

AWS deployment



The screenshot shows a Windows WordPad application window with the title bar 'AWSscript - WordPad'. The ribbon is set to 'Home' with the 'View' tab selected. The ribbon includes sections for Clipboard, Font, Paragraph, Insert, and Editing. The text area contains a PHP script that connects to an Amazon RDS instance and queries a database. The status bar at the bottom indicates a zoom level of 100%.

```
<?php
mysql_connect
("testdbinstance.cximficnshi7.us-west-
2.rds.amazonaws.com","dimcey","*****
*****");
mysql_select_db("users");
$q=mysql_query("SELECT * FROM person");
while($e=mysql_fetch_assoc($q))
$output[]=$e;
print(json_encode($output));
mysql_close();
?>
```

Thank you!

AWS Product categories

AWS **Primitive** Compute and Storage



Compute Capabilities

- Many different EC2 instance types
 - General purpose
 - Compute optimized
 - Storage optimized
 - Memory optimized
- Host any major data storage technology
 - RDBMS
 - NoSQL
 - Cache

Raw Storage Options

- EC2 Instance store (ephemeral)
- Amazon Elastic Block Store (EBS)
 - Standard volume
 - 1 TB, ~100 IOPS per volume
 - Provisioned IOPS volume
 - 1 TB, up to 4000 IOPS per volume
 - Stripe multiple volumes for higher IOPS or storage

Primitives add flexibility, but also come with operational burden!