Wowza Streaming Engine™ for Amazon EC2

User's Guide

Wowza Streaming Engine for Amazon EC2 User's Guide

Version: 4

www.wowza.com

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

This document is for informational purposes only and in no way shall be interpreted or construed to create any warranties of any kind, either express or implied, regarding the information contained herein.

No Endorsement or Warranty for Third-Party Links and Software

This document contains links to third-party websites ("Linked Sites") that are not under the control of Wowza Media Systems™, LLC ("Wowza™"). Wowza is not responsible for the content on or operation of Linked Sites. If you access Linked Sites, you do so at your own risk and understand that Wowza accepts no responsibility or liability for the content or operation of Linked Sites. Wowza provides these links only as a convenience, and the inclusion of a link does not imply that Wowza endorses such Linked Sites or any content, products, or services available from Linked Sites.

This document also refers to third-party software that is not licensed, sold, or distributed by Wowza (collectively, "Third-Party Software"). Wowza does not endorse, is not responsible for, and accepts no liability related to Third-Party Software. Please ensure that any and all use of Wowza software and third-party software is properly licensed.

Wowza Trademarks

Wowza™, Wowza Streaming Cloud™, Wowza Streaming Engine™, along with other trademarks, logos, trade dress, and other proprietary colors and markings, are each trademarks or registered trademarks of Wowza in the United States and in other countries (collectively, "Wowza Marks"). No right to use Wowza Marks in any way is granted hereunder. Contact sales@wowza.com for information about obtaining the right to use Wowza Marks. Any use of Wowza Marks, authorized or otherwise, shall inure to the sole benefit of Wowza.

Third-Party Trademarks and Copyrights

Trademarks, product names, logos, designs, trade dress, and other proprietary markings of non-Wowza third parties (collectively, "Third-Party Marks") may be trademarks or registered trademarks of their respective owners. Use of Third-Party Marks is for the sole purpose of identifying third-party products and services and does not represent endorsement, sponsorship, partnership, or other affiliation between Wowza and such third parties.

A list of applicable patent and copyright notices related to content in this document is available on the Wowza website at www.wowza.com/legal.

Document History

Version	Description	Date
Doc v4.0.0	Document release for Wowza Streaming Engine 4.0.0 software.	02-21-2014
Doc v4.1.2	Updated to include AWS Marketplace licensing and deployment options. See Wowza Streaming Engine Licensing Options.	04-20-2015
Doc v4.2.0	Updated for new **AWS Marketplace - Pro Edition (HVM)** software subscriptions for Wowza Streaming Engine software (version 4.2 and later). The new subscriptions replace the legacy **AWS Marketplace - Bring Your Own License** and **AWS Marketplace - Standard** software subscriptions. See Wowza Streaming Engine Licensing Options.	08-19-2015
Doc v4.3.0	Updated for Wowza Streaming Engine 4.3.0 software.	11-05-2015

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Table of Contents

Introduction **7**

Wowza Streaming Engine Licensing Options **8**

Option 1: AWS Marketplace - Wowza Streaming Engine 4: BYOL Pro Edition (HVM) 8

Option 2: AWS Marketplace - Wowza Streaming Engine 4: Pro Edition (HVM) 8

Option 3: Bring Your Own License (LicKey) 8

Option 4: DevPay 9

Notes 9

Getting Started **11**

Deploying Wowza Streaming Engine for EC2 Instances **12**

Choose a region 12

Create a key pair 12

Create a security group 13

Launch the instance 14

Get the instance public DNS and ID 20

Test the instance 21

Terminate the instance 21

Cancel your subscription 22

Managing Wowza Streaming Engine for EC2 Instances **23**

Manage the media server software with Wowza Streaming Engine Manager 23

Manage the instance through SSH 23

Upload files to the instance via FTP 25

Add a license key for Streaming Engine software 26

Performance benchmarks 27

Linux shell command cheat sheet for beginners 28

Wowza Streaming Engine Configuration Startup Packages **30**

Startup package example 30

Startup package basics 30

Pre-built startup packages 31

Default startup package 31

Load a startup package 32

Debug a startup package 33

Streaming Media from Amazon S3 ..... **34**

Amazon S3 authorization 35

Sample stream name for vods3 application testing 36

Wowza Streaming Engine Instance Details **37**

Wowza Streaming Engine details 37

Java Management Extensions (JMX) 38

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Custom module development 38

Startup Package Reference 40

Command <Install> 40

Command <Download> 41

Command <RunScript> 43

Additional Resources 45

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Introduction

This document describes how to install and configure Wowza Streaming Engine™ media server software on Amazon Elastic Compute Cloud (Amazon EC2), a web service that provides resizable compute capacity in the cloud. Amazon EC2 is a cloud-computing platform that virtualizes computing resources as virtual machines. A single virtual machine configuration is registered as an *Amazon Machine Image* (AMI). Wowza Media Systems™ provides Amazon Linux public AMIs with preconfigured and tuned versions of the Wowza Streaming Engine software that are ready to start using the Amazon Web Services (AWS) Management Console. You can use these AMIs to launch Wowza Streaming Engine for EC2 instances as needed, paying for your running instance time and bandwidth consumption only while the instances are running. You can launch Wowza Streaming Engine instances in geographical locations that are closer to your audience to reduce latency and in multiple geographical locations to provide high levels of redundancy.

Note

This document assumes basic familiarity with Wowza Streaming Engine software. If you're not familiar with Wowza Streaming Engine software, you can get a free Trial license after you complete the Wowza Streaming Engine Free Trial request form. The Wowza Streaming Engine Trial download includes the Wowza Streaming Engine software, documentation, and examples. The Wowza Streaming Engine User's Guide contains comprehensive documentation about how to install and use the software.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Wowza Streaming Engine Licensing Options

There are multiple ways to license Wowza Streaming Engine software on Amazon EC2 instances. We recommend that you use one of the new AWS Marketplace software subscriptions (described below) when deploying a Wowza Streaming Engine EC2 instance. AWS Marketplace offers streamlined methods for configuring and launching your EC2 instance, provides the current generation instance types, and uses the latest virtualization technology (HVM) for better performance.

Option 1: AWS Marketplace - Wowza Streaming Engine 4: BYOL Pro Edition (HVM)

If you already have a license for Wowza Streaming Engine software (or plan to purchase one), use this software subscription. You can use any Wowza Streaming Engine Subscription or Perpetual license key.

Amazon will send you a monthly invoice for your running instance time, storage, and bandwidth consumption. If you use a Wowza Streaming Engine Monthly Subscription license key, you'll also get a monthly invoice from Wowza™ for usage of the Wowza Streaming Engine software.

Option 2: AWS Marketplace - Wowza Streaming Engine 4: Pro Edition (HVM)

This software subscription enables you to purchase a Wowza Streaming Engine AMI with an embedded license for the Wowza Streaming Engine software. The embedded license enables unlimited use of the Transcoder (for 64-bit instances only), nDVR, and DRM features in the Wowza Streaming Engine software. This option provides the convenience of a combined monthly invoice from Amazon for running instance time, storage, bandwidth consumption, and Wowza Streaming Engine software usage.

Option 3: Bring Your Own License (LicKey)

Wowza provides pre-built AMIs that you can launch and configure in the AWS Management Console. This option enables you to add your license for Wowza Streaming Engine software when you configure your instance details in the console. To take advantage of the ease-of-use and benefits provided by AWS Marketplace, we recommend that you use your Wowza Streaming Engine software license with an AWS Marketplace - Wowza Streaming Engine 4: BYOL Pro Edition (HVM) software subscription.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Amazon will send you a monthly invoice for your running instance time, storage, and bandwidth consumption. If you use a Monthly Subscription license key, you'll also get a monthly invoice from Wowza for usage of the Wowza Streaming Engine software.

Option 4: DevPay

If you don't have a license for Wowza Streaming Engine software, you can use this option to launch a pre-built AMI from Wowza in the AWS Management Console. The license that's embedded in the software doesn't provide access to the Transcoder, nDVR, and DRM features. To get unlimited usage of Transcoder, nDVR, and DRM, and to take advantage of the ease-of-use and benefits provided by AWS Marketplace, we recommend that you purchase an AWS Marketplace - Wowza Streaming Engine 4: Pro Edition (HVM) software subscription.

This option provides the convenience of a combined monthly invoice from Amazon for running instance time, storage, bandwidth consumption, and Wowza Streaming Engine software usage.

Notes

- You can purchase Subscription and Perpetual licenses for Wowza Streaming Engine software on our Wowza Streaming Engine Pricing webpage.
- If you already have a license, it will continue to work with all Wowza Streaming Engine public AMIs under the terms of your license agreement. If you want to upgrade your older license, see our Software Upgrade Options for details.
- The **AWS Marketplace - Pro Edition (HVM)** software subscriptions for Wowza Streaming Engine 4.2 (and later) replace the legacy **AWS Marketplace - Bring Your Own License** and **AWS Marketplace - Standard** software subscriptions. The new software subscriptions provide the current generation instance types, use the latest virtualization technology (HVM) for better performance, and include the latest Wowza Streaming Engine software.

  If you've already purchased a legacy software subscription, you can continue to use the software until you cancel your subscription in your AWS account.
- If you've never used Wowza Streaming Engine software on the Amazon EC2 cloud-computing platform, our free Trial license is a good option to help you learn about the software. To get a Trial license, complete the Wowza Streaming Engine Free Trial request form. The Trial license limits the number of inbound and outbound connections to the server, doesn't support HTTP Origin functionality, and may have other limitations, so be sure to review the license agreement that comes with your Trial license key.

  Amazon will still charge for running instance time, storage, and bandwidth if you deploy a Wowza Streaming Engine instance on Amazon EC2 with a Trial license. If you just want to learn how the Wowza Streaming Engine software works, use the Trial license with a Wowza

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Streaming Engine installation on your local computer before deploying a Wowza Streaming Engine instance on Amazon EC2.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Getting Started

You must have an Amazon Web Services (AWS) account before you can start using Wowza Streaming Engine for Amazon EC2 software. You can create a free AWS account at https://console.aws.amazon.com.

To get started using Wowza Streaming Engine for Amazon EC2 software in the AWS Management Console, go to https://console.aws.amazon.com/ec2 and sign in using the email address and password for your AWS account. The AWS Console is a web interface that enables you to manage Amazon EC2 and Wowza Streaming Engine AMIs from a web browser. Many users find that it's easier to use the console instead of the EC2 command line tools.

The **EC2 Dashboard** will load in the AWS Console. If a different dashboard is displayed, click the **Services** tab in the navigation bar at the top of the webpage, click **All AWS Services**, and then click **EC2**.

Important

The AWS Console functionality that's described in this document is only supported by the Mozilla Firefox and Google Chrome web browsers.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Deploying Wowza Streaming Engine for EC2 Instances

This section describes how to deploy Wowza Streaming Engine for EC2 instances using the AWS Management Console.

Choose a region

Amazon EC2 is hosted in multiple geographical locations worldwide, and you can launch Wowza Streaming Engine for EC2 instances in all of these locations. To reduce latency, you can launch Wowza Streaming Engine instances in geographical locations that are closer to your audience or that are nearest to an encoder or camera that delivers a live stream to the Wowza Streaming Engine EC2 instance. To provide high levels of redundancy, you can launch Wowza Streaming Engine instances in multiple geographical locations.

When you sign-in to the AWS Console for the first time, the upper-right side of the navigation bar displays a drop-down list of available EC2 regions. For help in selecting a location that meets your requirements, see Regions and Availability Zones.

Create a key pair

You should create a key pair for the region that you want to stream from. A key pair enables you to use management tools such as SSH client to connect to your Amazon EC2 instance after you launch it. Public AMI instances use a public/private key pair to log in instead of a password. The public key half of this key pair is embedded in your instance when you launch it, allowing you to use the private key to log in securely without a password.

You can create key pairs for a region at any time—before you launch your EC2 instance in that region, when you configure instance details, or after the instance is launched.

Note

The AWS Marketplace 1-Click Launch option requires that you select an existing key pair before you can launch the Wowza Streaming Engine for Amazon EC2 instance. Use the procedure below to create this key pair. For other launch options, you can create a new key pair during the launch process or choose to not use a key pair.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

To create a key pair for use in a specific region, do the following:

1. Sign in to the AWS Management Console.
2. In the navigation bar, select the **Region** that you want to stream from.
3. In the **Navigation** pane, under **Network & Security**, click **Key Pairs**.
4. Click the **Create Key Pair** button.
5. In the **Create Key Pair** dialog box, in **Key pair name**, enter a name for your key pair (**[key-pair-name]**) and then click the **Create** button.

You'll be prompted to open or save the private key (**[key-pair-name].pem**) file. Save the file to your computer as it's the only copy of your private key. Amazon doesn't store this key.

Create a security group

A security group defines the firewall rules for your instance in the region that you want to stream from. You can configure the **default** security group for the region that you want to stream from or you can create a new security group in that region. You must open several TCP and UDP ports in the firewall for streaming from your Wowza Streaming Engine EC2 instance and to manage the instance.

Security groups are regional resources and must be configured in each region that you plan to use for streaming. You can create security groups for a region at any time so that they'll be available to use when you launch your instance in that region. You can also create a security group for a specific instance that you launch in the AWS Management Console.

Note

When you launch a Wowza Streaming Engine for EC2 instance through AWS Marketplace, a pre-configured security group is available for use with Wowza Streaming Engine software. This security group defines all the firewall rules required for streaming and to manage the Wowza Streaming Engine software.

To configure a security group for use in a specific region, do the following:

1. Sign in to the AWS Management Console.
2. In the navigation bar, select the **Region** that you want to stream from.
3. In the **Navigation** pane, under **Network & Security**, click **Security Groups**.
4. (Optional) To create a new security group, click the **Create Security Group** button, and then provide a **Name** and **Description** in the dialog box.
5. In the **Security group rules** area, create rules to open ports for streaming and ports for other connection protocols that enable you to manage the instance. For each protocol in the table below, click **Add Rule**, select the specified **Type**, enter the **Port Range** value, and select **Anywhere** in **Source**.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Notes

- The **Source** value determines the traffic that can reach your instance. If you select the value **Anywhere** in **Source**, traffic from all IP addresses can reach your instance over the specified ports. To restrict the traffic that can reach your instance, you can select **Custom IP** in **Source** and enter a single IP address, or an IP address range, in CIDR notation (for example, **203.0.113.5/32**).
- For more information about the required and optional ports used by Wowza Streaming Engine servers, see Configure streaming ports.

For this Protocol	Select this Type	Enter this Port/Port Range
RTMP	Custom TCP rule	1935
HTTP	Custom TCP rule	80
HTTPS, RTMPS	Custom TCP rule	443
RTSP	Custom TCP rule	554
FTP	Custom TCP rule	21
SSH	Custom TCP rule	22
Wowza Streaming Engine Management	Custom TCP rule	8086-8088
JMX Interface	Custom TCP rule	8084-8085
RTP, MPEG-TS	Custom UDP rule	6970-9999

6. When you've finished creating rules for all of the protocols that you want to use, click the **Create** button.

Launch the instance

You can launch your Wowza Streaming Engine EC2 instance with the EC2 console or by using AWS Marketplace 1-Click Launch.

When you launch a Wowza Streaming Engine AMI with the EC2 console, you can configure the instance details before it starts. You can add a startup package so that the Wowza Streaming Engine EC2 instance starts with a custom configuration. (Wowza Media Systems provides pre-built startup packages that you can download from the Wowza Startup Packages webpage. You can use them "as-is" or you can modify them to meet your requirements. For more information, see Wowza Streaming Engine Configuration Startup Packages in this document.) If you launch a BYOL Wowza Streaming Engine AMI with the EC2 console, you can add your Wowza Streaming Engine license key(s) to the EC2 instance configuration and it will be properly licensed after the instance starts.

The AWS Marketplace 1-Click Launch option enables you to get your Wowza Streaming Engine EC2 instance up-and-running quickly. You specify a few settings up-front, and the EC2 instance details are

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

configured for you during the launch process. This option DOES NOT allow you start your Wowza Streaming Engine EC2 instance with a custom configuration. In addition, if you use 1-Click Launch with a **Wowza Streaming Engine 4: BYOL Pro Edition (HVM)** subscription, you must add your license key after the instance is started to license the software.

Launch with EC2 Console

When you launch Wowza Streaming Engine AMIs into the Amazon EC2 console, you must configure most of the instance details in the console before the instance can be launched. You can launch Wowza Streaming Engine AMIs into the EC2 console from AWS Marketplace or from our Wowza Pre-built AMIs webpage.

To launch your Wowza Streaming Engine for Amazon EC2 instance into the EC2 console, do the following:

1. Select a Wowza Streaming Engine AMI to launch into the EC2 console from either AWS Marketplace or Wowza:

   Launch from AWS Marketplace

   a. Go to the AWS Marketplace webpage for the software subscription that you want to use:

      Wowza Streaming Engine 4: BYOL Pro Edition (HVM)

      -or-

      Wowza Streaming Engine 4: Pro Edition (HVM)

   b. Review the details, click **Continue**, and then sign in using your AWS account.

   c. On the **Manual Launch** tab, select a Wowza Streaming Engine software version, and then click **Launch with EC2 Console** for the region you want to use. The selected image will launch in the console and the **Choose an Instance Type** page will be displayed.

   Launch from Wowza

   a. Go to the Wowza Pre-built AMIs webpage and find the table for the licensing option that you chose (either **LicKey** or **DevPay**), and then click the Wowza Streaming Engine **AMI ID** in the **Location** where the Wowza Streaming Engine EC2 instance will be located.

   b. If you're signed-in to the AWS Management Console, the selected image will launch in the console and the **Choose an Instance Type** page will be displayed. If you're not signed-in, provide the email address and password for your AWS account, and then sign in.

2. On the **Choose an Instance Type** page, select the instance type that you want to use. The instance type specifies the hardware configuration for your EC2 instance. To select a different

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

instance type, select the filtering option to show **All instance types**, and then click the instance type that you want to use in the list. If you're not sure which instance type to select, see Amazon EC2 Instance Types. Because pricing per instance-hour can vary based on the selected instance type, also review the Amazon EC2 Pricing page.

Important

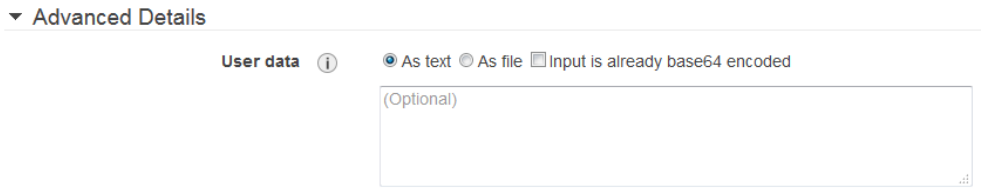
Wowza Streaming Engine **DevPay** AMIs won't work with **m3** instance types. If you launched an instance from a pre-built Wowza **DevPay** AMI ID, change the default **m3.medium** instance type on the **Choose an Instance Type** page to a supported instance type.

3. Click the **Next: Configure Instance Details** button to configure details for your selected instance type. The **Configure Instance Details** page enables you to configure optional settings for your selected instance type.

If you launched an AWS Marketplace BYOL or Wowza LicKey AMI

On the **Configure Instance Details** page, under **Advanced Details**, you can enter your license key (or license keys if applicable) for the Wowza Streaming Engine software:

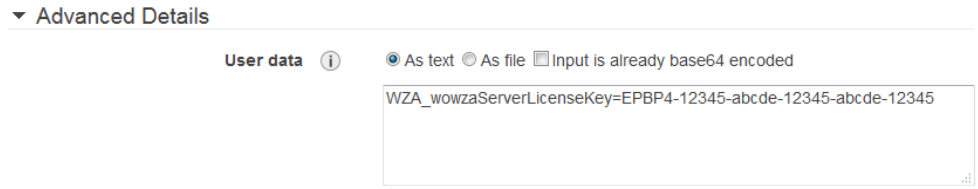
a. Click **Advanced Details** to reveal the advanced options:



b. In **User data**, select the **As text** option, and then enter the key-value pair data for your license keys into the text box, using the following format:

```
WZA_wowzaServerLicenseKey=[license-key]
```

The following figure shows what you might enter to license the Wowza Streaming Engine software with a Perpetual license key:



If applicable, pass in additional license keys using the pipe (|) character between the license key values:

```
WZA_wowzaServerLicenseKey=[license-key]|[license-key]
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Notes

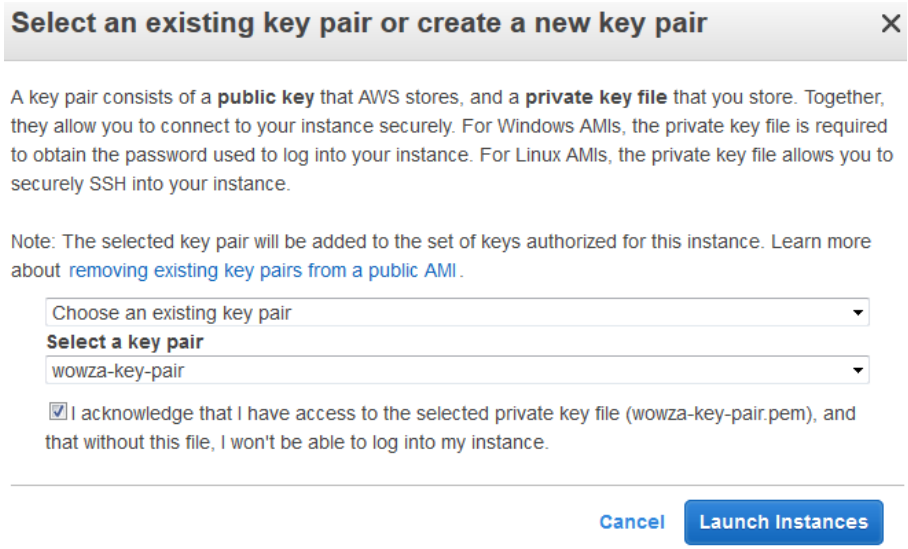
- Make sure that the **Input is already base64 encoded** check box is cleared.
- If you don't specify a license key for the Wowza Streaming Engine software in **WZA_wowzaServerLicenseKey**, the instance uses a temporary license key after you launch. You must replace the temporary license key with a valid license key for the Wowza Streaming Engine software. For more information, see Add a license key for Streaming Engine software in this document.
- In the **User data** field, you can also use a **WZA_startupPackageURL** key-value pair to specify a startup package to use when starting your instance. The full URL to the startup package and license key data is specified using comma-delimited key-value pairs:
  `WZA_startupPackageURL=[url-to-startup-package],WZA_wowzaServerLicenseKey=[license-key]|[license-key]`

  A startup package allows the Wowza Streaming Engine EC2 instance to have a custom configuration when it launches. If you don't specify a startup package in the **User data** field now, a **default** startup package with **live**, **vod**, and **vods3** streaming applications is used. For more information, see Wowza Streaming Engine Configuration Startup Packages in this document.
- If you launched an AWS Marketplace Pro or Wowza **DevPay** AMI, the license key is already embedded in the software and can't be changed.

4. Click the **Next: Add Storage** button to configure optional storage device settings that your instance is launched with. You can attach additional Elastic Block Store (EBS) volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. For more information about how to configure the **Add Storage** page, see Storage.
5. Click the **Next: Tag Instance** button to configure optional tagging options for your Amazon EC2 resources. For more information about how to configure the **Tag Instance** page, see Tagging Your Amazon EC2 Resources.
6. Click the **Next: Configure Security Group** button to assign the security group that has the firewall rules that control the traffic for your instance. On the **Configure Security Group** page, you can create this security group or select the security group that you already created for the instance. (See Create a security group in this document.)
7. Click the **Review and Launch** button. On the **Review Instance Launch** page, review your instance details and then click the **Launch** button. This will display a dialog box where you can select or create a key pair for the instance. A key pair enables you to use Secure Shell (SSH) to connect to your Amazon EC2 instance after you launch it and isn't required. For more information, see Manage the instance through SSH in this document.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

If you've already created a key pair, select **Choose an existing key pair**, select the key pair name in the **Select a key pair** list, select the **Acknowledgement** check box, and then click **Launch Instances**:



If you haven't created a key pair yet, select **Create a new key pair**, enter a name for your key pair in **Key pair name**, and then click **Download Key Pair**. You'll be prompted to open or save the private key (**[key-pair-name].pem**) file. Save the file to your computer as it's the only copy of your private key. Amazon doesn't store this key. After you do this, select the **Acknowledgement** check box, and then click **Launch Instances**.

If you don't want to use a key pair, select **Proceed without a key pair**, select the **Acknowledgement** check box, and then click **Launch Instances**.

8. In the **Launch Status** page, click the **View Instances** button to see the status of your EC2 instance. It may take several minutes for your instance to launch. After the **Instance State** changes from **pending** to **running**, the instance is started. It might take an additional minute or two after that before Wowza Streaming Engine instance is available for streaming.

Important

You'll start incurring charges for your running instance after it boots. Charges accrue for each hour or partial hour that you keep the instance running—even when it's idle. When you no longer need the instance, be sure to terminate it in order to stop incurring charges. For more information, see Terminate the instance in this document.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Launch with AWS Marketplace 1-Click

Notes

- **Important:** The 1-Click Launch option uses a **default** startup package with **live**, **vod**, and **vods3** applications that are configured to use recommended settings for streaming. It DOES NOT let you customize your Wowza Streaming Engine configuration with a startup package. If you want to launch your Wowza Streaming Engine EC2 instance with a custom Wowza Streaming Engine software configuration, you must use the launch with EC2 method.
- The 1-Click Launch option requires that you select an existing key pair before you can launch the Wowza Streaming Engine for Amazon EC2 instance. See Create a key pair in this document to create this key pair.

1. Go to the AWS Marketplace webpage for the software subscription that you want to use:

   Wowza Streaming Engine 4: BYOL Pro Edition (HVM)

   -or-

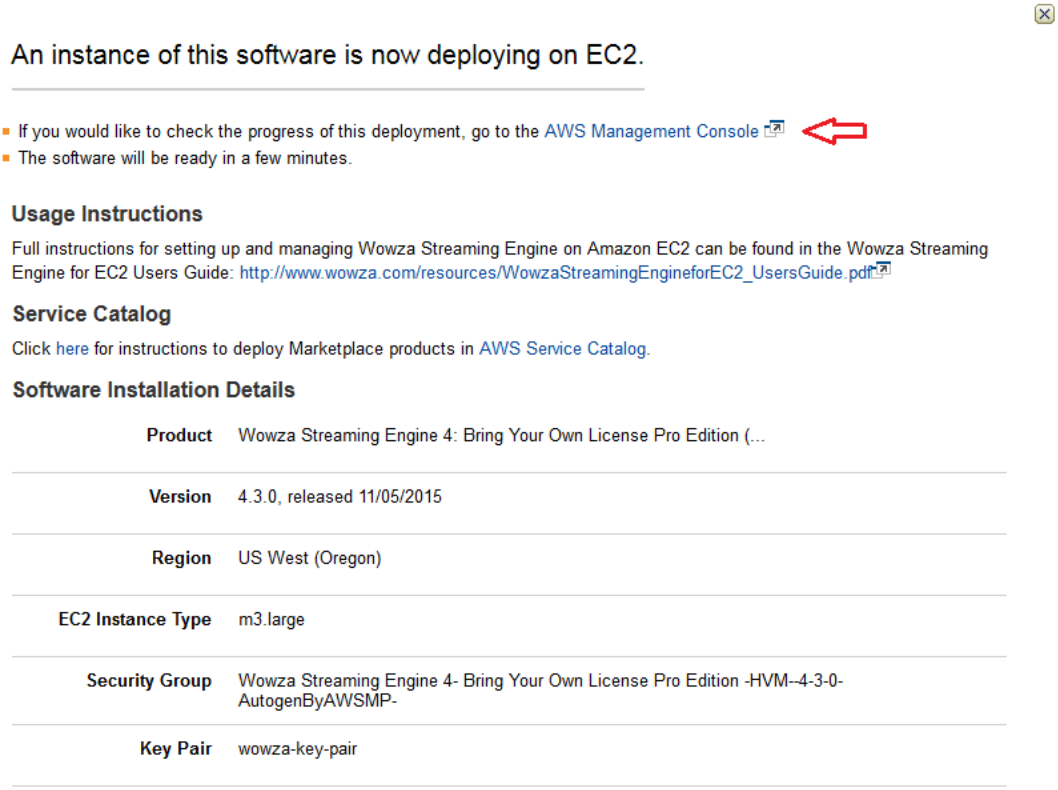
   Wowza Streaming Engine 4: Pro Edition (HVM)

2. Review the details, click **Continue**, and then sign in using your AWS account.
3. On the **1-Click Launch** tab, select a Wowza Streaming Engine software **Version**, a **Region**, and an **EC2 Instance Type**.
4. In the **Security Group** list, select **Create new based on seller settings**. This will create a security group that has all the required firewall rules for streaming and for managing the Wowza Streaming Engine software.

   If you already created a security group for use with Wowza Streaming Engine software in the selected region, you can select it in the **Security Group** list instead.
5. In the **Key Pair** list, select the key pair you created for use with the Wowza Streaming Engine software.
6. Click **Launch with 1-Click**.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

7. To check the progress of your deployment, in the confirmation message, click the link to go to the AWS Management Console.



8. If you launched a BYOL EC2 instance, after the instance is running, you must add your license key (or keys) for the software. See Add a license key for Streaming Engine software in this document.

Get the instance public DNS and ID

You must use the public domain name (or hostname) and instance ID of your running instance to access the instance remotely for configuration using Wowza Streaming Engine Manager, to connect to the instance using Secure Shell (SSH), and for streaming. To get the public domain name and instance ID of your instance, do the following:

1. In the **Navigation** pane of the AWS Management Console, under **Instances**, click **Instances**.
2. Select the running instance.
3. In the lower pane, click the **Description** tab. The **Public DNS** value is the public domain name of your running instance and the **Instance ID** is the ID for the instance.
4. Make note of these values as they're used throughout the rest of this document.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Note

If you require a persistent public IP address that can be assigned to and removed from instances as needed, you can use a static IP address that's designed for dynamic cloud computing called an *Elastic IP address*. An Elastic IP address is associated with your account (not with a particular instance). For more information, see Elastic IP Addresses (EIP).

Test the instance

To quickly verify that your Wowza Streaming Engine for EC2 instance is working correctly:

1. Open the following URL in a web browser to connect to Wowza Streaming Engine Manager:

   ```
   http://[public-domain-name]:8088/enginemanager
   ```

   Replace `[public-domain-name]` with the **Public DNS** value for the instance. (See Get the instance public DNS and ID in this document.)

2. Sign with the user name **wowza** and a password. The password is the **Instance ID**. (See Get the instance public DNS and ID in this document.)

3. In Wowza Streaming Engine Manager, in the **Test Video** area of the **Home** page, click **Test Players**.

   The **Test Players** window that opens includes test players that are pre-configured to stream the **sample.mp4** video file in the Wowza Streaming Engine software installation over various streaming formats. Each tab in the **Test Players** window either hosts a test player that you can use to play the video file or provides instructions for playing the video file.

4. Click one of the tabs in the **Test Players** window (for example, the **Adobe HDS** tab), and then click **Start**.

   The **sample.mp4** video file should start to play. You're now ready to configure and use your Wowza Streaming Engine instance on Amazon EC2.

Note

Wowza Streaming Engine Manager enables you to easily configure, manage, and monitor your Wowza media server. To learn about the different parts of the Wowza Streaming Engine Manager user interface, see How to find your way around Wowza Streaming Engine Manager. For an introduction in creating and managing streaming applications and performing some basic administrative functions, see How to get started as a Wowza Streaming Engine Manager administrator.

Terminate the instance

When you terminate an instance, you'll lose all files that you have on the server. You can save this data to Amazon S3 or to Amazon EBS before terminating the instance.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Do the following to terminate the instance:

1. In the **Navigation** pane, under **Instances**, click **Instances**.
2. Select the running instance that you want to terminate.
3. Click the **Actions** button, click **Instance State**, and then click **Terminate**. The **Instance State** column for the selected instance(s) will show **shutting-down** and then **terminated**.

Important

Amazon recommends that you confirm that the machine reaches the **terminated** state before you sign out. You'll continue to be charged for instances that fail to shut down correctly.

Cancel your subscription

Be sure to terminate all running instances for the subscription that you want to cancel, and then do one of the following:

If you purchased a AWS Marketplace software subscription, sign in to your AWS account management page, and then click **Manage your software subscriptions** under **Your software**. Then on the **Your Software** webpage, find the software subscription that you want to cancel and click **Cancel subscription**.

If you purchased a legacy software subscription (legacy LicKey or DevPay AMI), sign in to the Amazon Payments – Application Billing page, and then click **View/Cancel Application** under the application subscription that you want to cancel. Then scroll to the end of the **View/Cancel Application** webpage and click **Cancel the use of Wowza Streaming Engine**.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Managing Wowza Streaming Engine for EC2 Instances

Manage the media server software with Wowza Streaming Engine Manager

Wowza Streaming Engine Manager enables you to easily configure, manage, and monitor the Wowza Streaming Engine software. The browser-based manager enables publishers with a diverse range of technical abilities to have greater control and confidence when streaming video. To learn about the different parts of the Wowza Streaming Engine Manager user interface, see How to find your way around Wowza Streaming Engine Manager.

To manage your running Wowza Streaming Engine EC2 instance with Wowza Streaming Engine Manager:

1. Enter the following URL in a web browser to connect to Wowza Streaming Engine Manager:

   ```
   http://[public-domain-name]:8088/enginemanager
   ```

   Replace `[public-domain-name]` with the **Public DNS** value for the instance. (See Get the instance public DNS and ID in this document.)

2. Sign with the user name **wowza** and a password. The password is the **Instance ID**. (See Get the instance public DNS and ID in this document.)

3. See How to get started as a Wowza Streaming Engine Manager administrator for an introduction in creating and managing streaming applications and performing some basic administrative functions. To see all our Support Articles that can help you configure and use the Wowza Streaming Engine software to its fullest potential, go to our Wowza Documentation webpage.

Manage the instance through SSH

You may need to open a secure session to your Amazon EC2 instance using Secure Shell (SSH) in order to start and stop the Wowza Streaming Engine software or to re-configure the media server. Public AMI instances use a public/private key pair to log in instead of a password. The public key half of this pair is embedded in your instance, allowing you to use the private key half to log in securely without a password. You can use the key pair that you created for the region in which your Amazon EC2 instance is running. (See Create a key pair in this document.)

On Windows operating systems, you can open a secure session to your Amazon EC2 instance by using the PuTTY Secure Shell client. This section describes how to use the PuTTY client and the PuTTYgen

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

key generator, which you can download from http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html.

Note

For additional details about the procedures in this section, see Connecting to Your Linux Instance from Windows Using PuTTY.

Convert your private key

The PuTTY Secure Shell client doesn't natively support the private key format generated by Amazon EC2. Fortunately, PuTTY has a tool called PuTTYgen that you can use to convert your private key to the required **PuTTY Private Key File (*.ppk)** format. To convert the **[key-pair-name].pem** file that you created to a **[key-pair-name].ppk** file, do the following:

1. Start **PuTTYgen** (**Start** > **All Programs** > **PuTTY** > **PuTTYgen**).
2. In the **PuTTY Key Generator** dialog box, click **Load** and select the **[key-pair-name].pem** file that you want to convert. You'll need to select the **All Files *.*** option in the **File filter** drop-down list to see PEM files in the file list.
3. Click **Save private key** and save the file with the name **[key-pair-name].ppk**.
4. Close the dialog box.

Connect to the instance

To open a Secure Shell (SSH) session to your Amazon EC2 instance, do the following:

1. Start **PuTTY** (**Start** > **All Programs** > **PuTTY** > **PuTTY**).
2. In the **PuTTY Configuration** dialog box, in the **Category** tree, select **Session**.
3. On the **Basic options for your PuTTY session** page, in **Specify the destination you want to connect to**:
    a. In the **Host Name (or IP address)** field, enter **[instance-public-dns]**, where **[instance-public-dns]** is the public domain name of your Amazon EC2 instance running Wowza Streaming Engine software.
    b. In the **Port** field, enter **22**. Make sure that you have followed the instructions in this document for opening TCP port 22 in Create a security group.
    c. Under **Connection type**, select the **SSH** option.
4. In the **Category** tree, select **Connection** > **SSH** > **Auth**.
5. On the **Options controlling SSH authentication** page, click the **Browse** button to find and open the **[key-pair-name].ppk** file.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

6. (Optional). If you will be opening this same session later, you can save it for future use. To save the session information:
    a. Select **Session** in the **Category** tree.
    b. On the **Basic options for your PuTTY session** page, enter a name for the session in **Saved Sessions**, and then click the **Save** button.
7. On the **Options controlling SSH authentication** page, click the **Open** button to open the secure SSH session. The first time you connect to your instance, you'll get a **PuTTY Security Alert** that references the first use of **[key-pair-name]**. Click **Yes** to accept the security key.

If you previously saved the SSH session information for this Amazon EC2 instance, do the following:

1. Start **PuTTY** (**Start** > **All Programs** > **PuTTY** > **PuTTY**).
2. In the **PuTTY Configuration** dialog box, in the **Category** tree, select **Session**.
3. On the **Basic options for your PuTTY session** page, in **Load, save or delete a stored session**, click the saved SSH session name and then click the **Load** button.
4. Click the **Open** button to open the secure SSH session.

You should see the **login as:** prompt in the SSH client window. Enter the user name **ec2-user** to login to your Amazon EC2 instance. When working with Wowza Streaming Engine software, it's best to be logged in as the **root** user. You can switch to the **root** user by entering the following command in the SSH client window:

```
sudo su -
```

Disconnect from the instance

To end your SSH session, enter the **exit** command or press CTRL+D. You may have to do this twice if you're logged-in as the **root** user.

Important

Disconnecting from the instance doesn't affect the instance status. If it was running when you disconnected, it'll continue to run and you'll incur charges for the running instance. When you no longer need the instance, be sure to terminate it in order to stop incurring charges. For more information, see Terminate the instance.

Upload files to the instance via FTP

You may need to connect to your Wowza Streaming Engine instance using FTP to upload media files or Synchronized Multimedia Markup Language (SMIL) playlist files (for adaptive bitrate streaming), or to refresh configuration files. For convenience, most of the Wowza Streaming Engine folders are symbolically linked to the **/home/wowza** folder for easy access using FTP.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Wowza Streaming Engine instances come preinstalled with the FTP Server (**vsftpd**) for Linux. A default **wowza** FTP user account has been added to the system with the password set to the instance ID (this is done for security reasons). You can get the instance ID of a running instance either through the AWS Management Console or, if logged-in to the instance, by using the following command in the SSH client window:

```
wget -q -O - http://169.254.169.254/latest/meta-data/instance-id
```

For security reasons, we strongly recommend that you change the default password for the **wowza** FTP user account for your AMI. To change the password, log-in to the instance as the **ec2-user** user, execute the following command, and then follow the prompts:

```
sudo passwd wowza
```

Note

Be sure to open TCP port 21 in your **Security Groups** settings so that you can connect to your instance using FTP. (See Create a security group in this document.) You must also configure your FTP client to use **PORT** communication (ACTIVE mode). The FTP configuration doesn't support **PASV** communication (PASSIVE mode). Consult your FTP client documentation for more information.

Add a license key for Streaming Engine software

If you launched a Wowza Streaming Engine BYOL AMI into the EC2 console, but didn't supply a license for the Wowza Streaming Engine software while configuring the instance details, the instance uses a temporary license key for the server software, which you must replace. You can use the following options to replace the temporary license key:

Note

The Wowza Streaming Engine software license for AWS Marketplace Pro and **DevPay** AMIs is embedded in the software and you can't change it.

Wowza Streaming Engine Manager

1. Enter the following URL in a web browser to connect to Wowza Streaming Engine Manager:

   ```
   http://[public-domain-name]:8088/enginemanager
   ```

   Replace `[public-domain-name]` with the **Public DNS** value for the instance. (See Get the instance public DNS and ID in this document.)

2. Sign with the user name **wowza** and a password. The password is the **Instance ID**. (See Get the instance public DNS and ID in this document.)

3. In Wowza Streaming Engine Manager, click the **Server** tab at the top of the page, and then click **Server Setup** in the contents pane.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

4. In the **Server Setup** page, click **Edit**, and then replace the temporary license key value in the **License Keys** box with your Subscription or Perpetual license key for the Wowza Streaming Engine software. If applicable, add separate license keys for the Transcoder, nDVR, and DRM features. Each license key should be on a separate line. For more information, see Add license keys.
5. Click **Save**, and then click **Restart Now** when prompted to apply the changes.

SSH client connection

1. Connect to your instance using a secure SSH client session. (See Manage the instance through SSH in this document.)
2. In the SSH client window, change directory to the **/usr/local/WowzaStreamingEngine/conf** folder. (See Linux shell command cheat sheet for beginners in this document.)
3. Open the **Server.license** file in a text editor, and then replace the entire contents of the file with your Subscription or Perpetual license key for the Wowza Streaming Engine software. If applicable, add separate license keys for the Transcoder, nDVR, and DRM features. Each license key should be on a separate line. For more information, see Add license keys.
4. Save the file and then restart the Wowza Streaming Engine instance to activate the key(s). You can do this by executing the following commands:

```
sudo service WowzaStreamingEngine stop
sudo service WowzaStreamingEngine start
```

Startup package

You can include your license key(s) in the **Server.license** file and include the file in a startup package. The license key data is passed-in as user data to replace the temporary license key when the instance is started. For more information about how to use startup packages, see Wowza Streaming Engine Configuration Startup Packages.

FTP

You can connect to the instance via FTP and then upload a copy of the **Server.license** file that has the new license key data to replace the existing file. For more information, see Upload files to the instance via FTP in this document.

Custom AMI

You can create a custom Amazon EC2 AMI that includes the license key data. This option is for advanced users and instructions about how to do this is beyond the scope of this document.

Performance benchmarks

Below are some performance benchmarks when using Wowza Streaming Engine software on Amazon EC2. These are total bitrate values that a single instance of a given instance type can handle

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

for outgoing streams. To calculate concurrent connections, divide these numbers by the bitrate of your stream, in kilobits-per-second (Kbps).

```
t2.small:   150,000 Kbps
m3.large:   250,000 Kbps
m3.xlarge:  350,000 Kbps
```

For example if you're doing live streaming using a 500 Kbps live stream, then a given instance type can handle the following number of concurrent connections.

```
t2.small:   300 concurrent connections
m3.large:   500 concurrent connections
m3.xlarge:  700 concurrent connections
```

Linux shell command cheat sheet for beginners

Linux users connect to an instance using an SSH session. This section describes some useful commands for users who aren't familiar with the Linux environment. If the command you're looking for isn't included in this section, there are many Linux guides available on the Internet that you can consult.

Viewing directory contents

The following command changes your current directory to one that shows the most common user accessed Wowza Streaming Engine directories:

```
cd /home/wowza
```

From here, you can display the subdirectories in the Wowza Streaming Engine directory by typing the following command:

```
ls
```

To view the contents of a subdirectory, type the following:

```
cd [directory name]
```

To move up one level from the current directory, type the following:

```
cd..
```

Viewing log messages

You can interactively log entries as they are added to Wowza Streaming Engine logs by executing the following commands:

```
cd /usr/local/WowzaStreamingEngine/logs
tail -f wowzastreamingengine_access.log
```

Stopping Wowza Streaming Engine

To stop the Wowza Streaming Engine software, enter the following command:

```
sudo service WowzaStreamingEngine stop
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Starting Wowza Streaming Engine

To start the Wowza Streaming Engine software, enter the following command:

```
sudo service WowzaStreamingEngine start
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Wowza Streaming Engine Configuration Startup Packages

A Wowza Streaming Engine startup package is a compressed (zipped) folder that contains a startup manifest file (**startup.xml**), configuration files, and scripts. It allows you to configure a Wowza Streaming Engine instance at launch time by passing in user data. Wowza Media Systems provides pre-built startup packages that you can download from the Wowza Startup Packages webpage. You can use them "as-is" or you can modify them to meet your requirements. If you don't specify a startup package when you launch your instance, a **default** startup package is used.

If you load your own startup package when launching an instance, the **default** startup package won't be used. Your startup package must provide all of the application configurations that are required for streaming.

Startup package example

The following example shows the file structure of a simple startup package:

```
[mywowzaconfig]
      startup.xml
      [wowza]
            [applications]
                  [myapp]
            [conf]
                  Server.license
                  [myapp]
                        Application.xml
      [tuning]
            tune.sh
```

To see how a startup package is constructed, download and extract the contents of the Wowza Streaming Engine **default** startup package: Download default_startupPackage.zip

Startup package basics

The startup manifest file (**startup.xml**) for the startup package outlined above has the following content:

```
<Startup>
      <Commands>
            <Install>
                  <Folder>wowza</Folder>
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

```
            </Install>
            <RunScript>
                  <Script>tuning/tune.sh</Script>
            </RunScript>
      </Commands>
</Startup>
```

In **startup.xml**, the **<Install>** command instructs the startup processor to copy the contents of the included **wowza** folder into the **/usr/local/WowzaStreamingEngine** folder of the running Wowza Streaming Engine instance:

```
<Install>
      <Folder>wowza</Folder>
</Install>
```

This gives you a chance to create application folders and configuration folders and files as well as inject a **Server.license** file for a **LicKey** instance.

The **<RunScript>** command instructs the startup processor to run the included script **tuning/tune.sh**:

```
<RunScript>
      <Script>tuning/tune.sh</Script>
</RunScript>
```

This script changes configuration parameters based on instance size. This script must be a shell script (not a binary application) and will be executed by the operating environment that's running on the Wowza Streaming Engine instance. When a script is executed, the working directory is set to the root directory of the startup package (the folder that contains the **startup.xml** file).

For more information about the commands that can appear in a startup manifest file (**startup.xml**), see the Startup Package Reference at the end of this document.

Pre-built startup packages

Wowza provides several pre-built startup packages that you can download from the Wowza Startup Packages webpage. You can use them "as-is" or you can modify them to meet your requirements.

Default startup package

If you launch a Wowza Streaming Engine for EC2 AMI without specifying a startup package, the **default** startup package is used. You can download and look at the **default** startup package: Download default_startupPackage.zip

The following application names are configured in the **default** startup package:

- live
- vod
- vods3

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

If you load your own startup package when launching an instance, the **default** startup package won't be used. Your startup package must provide all of the application configurations that are required for streaming.

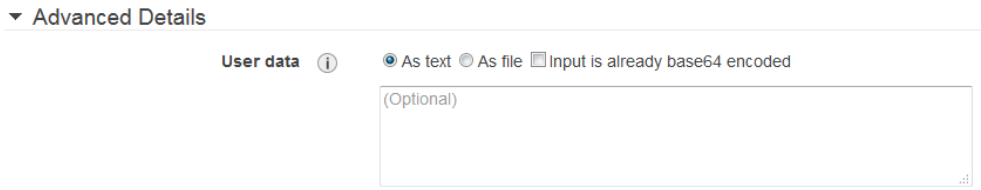
Load a startup package

When you launch a new instance in AWS Management Console, you can load a Wowza Streaming Engine startup package to launch the instance with a customized Wowza Streaming Engine software configuration. Wowza provides pre-built startup packages that you can download from the Wowza Startup Packages webpage. You can download a startup package and load it "as-is" or you can modify it to meet your requirements before you load it.

There are two methods to load a startup package from the Management Console: **As text** (key-value pair that references the full startup package URL) or **As file** (include the startup package contents as **User data**). When using the **As file** method, the startup package must be no more than 16 kilobytes (KB).

To load a startup package **As text**, do the following:

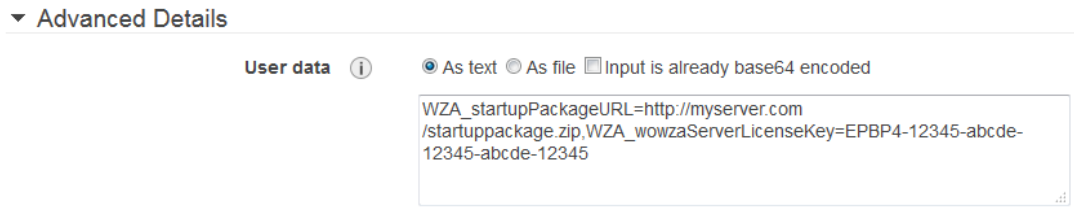
1. On the **Configure Instance** page in the Management Console, click **Advanced Details** to reveal the advanced options:



2. In **User data**, select the **As text** option, and then enter the **WZA_startupPackageURL** key-value pair data for your startup package (.zip) file into the text box. Optionally, append the **WZA_wowzaServerLicenseKey** key-value pair data that specifies the license key(s) for the Wowza Streaming Engine software to form a comma-separated list of key-value pairs. For example:

```
WZA_startupPackageURL=[startup-package-
url],WZA_wowzaServerLicenseKey=[pipe-separated-list-of-license-keys]
```

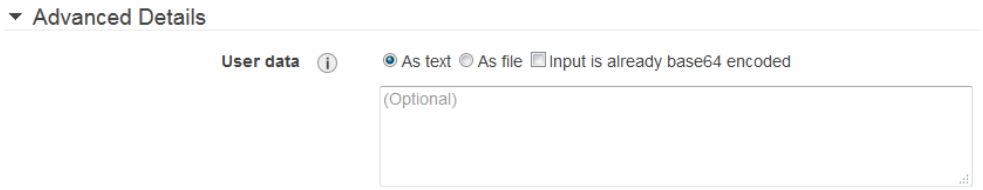
The following figure shows what you might enter to include a startup package and to license the Wowza Streaming Engine software with a Perpetual license key:



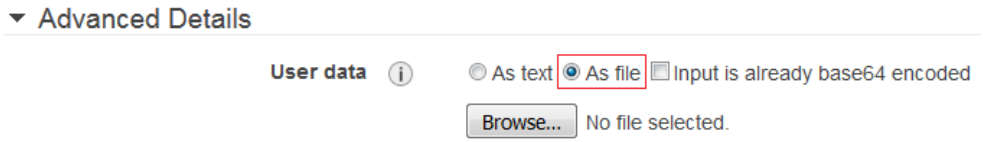
Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

To load a startup package **As file**, do the following:

1. On the **Configure Instance** page in the Management Console, click **Advanced Details** to reveal the advanced options:



2. In **User data**, select the **As file** option:



3. Click **Browse**, and then find and upload the startup package (.zip) file in the **File Upload** dialog box.

Notes

- Make sure that the **Input is already base64 encoded** check box is cleared.
- The ability to add startup package user data using the **As file** option in the Management Console is limited to Mozilla Firefox and Google Chrome web browsers.

Debug a startup package

The best way to debug a startup package is to launch an AMI that's using it and then look in the startup log file for errors or warnings. The startup log file is written to the following location:

```
/usr/local/WowzaStreamingEngine/logs/wowzastreamingengine_startup.log
```

The log is extensive and should have ample information to help debug startup package issues.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Streaming Media from Amazon S3

You can use Wowza Streaming Engine for Amazon EC2 instances to stream media directly from Amazon Simple Storage Service (Amazon S3). Wowza Streaming Engine software uses Media Cache caching technology to improve performance when streaming media from Amazon S3. Media Cache is a read-through caching mechanism for video on demand streaming that can pull content from an HTTP origin or from network-attached storage (NAS). The Media Cache system is tuned on a per-instance basis in Wowza Streaming Engine startup packages. You can see the tuning in the **tuning/tune.sh** file that's included in any Wowza Streaming Engine startup package.

This feature is included in the **default** startup package for Wowza Streaming Engine for Amazon EC2 and is available when using the **vods3** application.

To stream content from Amazon S3, use stream names in the following form. The **amazons3/** part of the stream name identifies that the stream is sourced from Amazon S3:

```
[media-type]:amazons3/[s3-bucket-name]/[path-to-content-in-s3]
```

Using the above example, to play the **mycoolvideo.m4v** file that's stored in the Amazon S3 bucket **mybucket** at the path **videos/coolvideos**, the stream URLs are:

Adobe Flash Player (RTMP)

```
Server: rtmp://[instance-public-dns]/vods3
Stream: mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4v
```

Adobe Flash Player (RTMP single URL)

```
rtmp://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4
v
```

Adobe Flash Player (Flash HDS)

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4
v/manifest.f4m
```

Apple iOS device (Apple HLS)

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4
v/playlist.m3u8
```

Microsoft Silverlight (Smooth Streaming)

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4
v/Manifest
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

MPEG-DASH player

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4
v/manifest.mpd
```

RTSP/RTP player or device

```
rtsp://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4
v
```

Notes

- When streaming using a stream name that includes path elements (for example, **mp4:amazons3/mybucket/videos/coolvideos/mycoolvideo.m4v**), you must supply both the **application** name and **applicationInstance** name as part of the URL. The example URLs above use the default **applicationInstance** name **_definst_**.
- You must use the literal 'amazons3' in the path, as shown in the examples above, not the equivalent segment of the link specified by the properties page of your S3 bucket.

Amazon S3 authorization

By default, the **vods3** application is configured with S3 authorization turned off. This means that all content must be publicly available. To stream non-publicly available content, modify the Media Cache configuration in Wowza Streaming Engine Manager:

1. Enter the following URL in a web browser to connect to Wowza Streaming Engine Manager:

   ```
   http://[public-domain-name]:8088/enginemanager
   ```

   Replace `[public-domain-name]` with the **Public DNS** value for the instance. (See Get the instance public DNS and ID in this document.)

2. Sign with the user name **wowza** and a password. The password is the **Instance ID**. (See Get the instance public DNS and ID in this document.)
3. In Wowza Streaming Engine Manager, click the **Server** tab at the top of the page, and then click **Media Cache** in the contents pane.
4. On the **Media Cache** page, on the **Sources** tab, and click the **Edit** (pencil) icon for **amazons3** source.
5. Enter your **AWS Access Key ID** and **AWS Secret Access Key**, and then click **Save**.

You can now re-stream protected content using the **vods3** application.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Sample stream name for vods3 application testing

Wowza provides a sample MP4 file at the following stream name that you can use to test your **vods3** application:

```
mp4:amazons3/wowzamediacache/sample/sample.mp4
```

Using the above stream name, to play the **sample.mp4** file that's stored in the Amazon S3 bucket **wowzamediacache** at the path **sample/**, the stream URLs are:

Adobe Flash Player (RTMP)

```
Server: rtmp://[instance-public-dns]/vods3
Stream: mp4:amazons3/wowzamediacache/sample/sample.mp4
```

Adobe Flash Player (RTMP single URL)

```
rtmp://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/wowzamediacache/sample/sample.mp4
```

Adobe Flash player (Flash HDS)

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/wowzamediacache/sample/sample.mp4/manifes
t.f4m
```

Apple iOS device (Apple HLS)

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/wowzamediacache/sample/sample.mp4/playlis
t.m3u8
```

Microsoft Silverlight (Smooth Streaming)

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/wowzamediacache/sample/sample.mp4/Manifes
t
```

MPEG-DASH player

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/wowzamediacache/sample/sample.mp4/manifes
t.mpd
```

RTSP/RTP player or device

```
http://[instance-public-
dns]/vods3/_definst_/mp4:amazons3/wowzamediacache/sample/sample.mp4
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Wowza Streaming Engine Instance Details

A Wowza Streaming Engine for Amazon EC2 instance is built using the Amazon Linux AMI as the base. This AMI is provided by Amazon.

Other components that are installed:

- Wowza Streaming Engine software
- The latest Java Development Kit (JDK) for Linux
- FTP Server (vsftpd) for Linux
- S3FS FUSE-based file system

Note

A web server isn't included in Wowza Streaming Engine for Amazon EC2 AMIs.

Wowza Streaming Engine details

The Wowza Streaming Engine software is installed at the following default location:

```
/usr/local/WowzaStreamingEngine
```

The Wowza Streaming Engine service (**Wowza Streaming Engine [version-number]**) runs on the following ports:

```
TCP 80, 443, 554, 1935
      - RTMP (all variants), RTSP, Smooth, and Cupertino streaming
UDP 6970-9999
      - RTP and MPEG-TS UDP streaming
```

Management tools for the Wowza Streaming Engine software run on the following TCP ports:

```
21                - FTP access
22                - SSH access
8084-8085         - JMX/JConsole
8086              - Stream Manager and Administration
8087              - Wowza Streaming Engine Manager REST API
8088              - Wowza Streaming Engine Manager
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Java Management Extensions (JMX)

The Java Management Extensions (JMX) interface to your instance is preconfigured to listen to connections on TCP ports 8084 and 8085 using the public domain name. You must open these ports to TCP traffic to connect to your EC2 instance successfully.

The JMX URL is:

```
service:jmx:rmi://[instance-public-dns]:8084/jndi/rmi://[instance-public-dns]:8085/jmxrmi
```

From most JMX tools such as JConsole, you can connect using the following address:

```
[instance-public-dns]:8085
```

Where **[instance-public-dns]** is the instance public dns value. The default user name is **wowza** and the default password is the instance ID.

User access is managed in the following files:

```
/usr/local/WowzaStreamingEngine/conf/jmxremote.access
/usr/local/WowzaStreamingEngine/conf/jmxremote.password
```

Custom module development

When developing custom server-side modules, system-level properties that describe the currently running instance are available. You can get the value of one of these system properties by executing the following Java method:

```
String value =
System.getProperty("com.wowza.amazonaws.ec2.AWSEC2_METADATA_INSTANCE_ID");
```

The available properties are:

```
- Amazon instance id
com.wowza.amazonaws.ec2.AWSEC2_METADATA_INSTANCE_ID

- Security group
com.wowza.amazonaws.ec2.AWSEC2_METADATA_SECURITY_GROUPS

- Local IP address
com.wowza.amazonaws.ec2.AWSEC2_METADATA_LOCAL_IPV4

- Launch index
com.wowza.amazonaws.ec2.AWSEC2_METADATA_AMI_LAUNCH_INDEX

- Public host name
com.wowza.amazonaws.ec2.AWSEC2_METADATA_PUBLIC_HOSTNAME

- DevPay product code
com.wowza.amazonaws.ec2.AWSEC2_METADATA_PRODUCT_CODES
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

```
- Instance type (ex. t2-small)
com.wowza.amazonaws.ec2.AWSEC2_METADATA_INSTANCE_TYPE

- Public host name
com.wowza.amazonaws.ec2.AWSEC2_METADATA_HOSTNAME

- Local host name
com.wowza.amazonaws.ec2.AWSEC2_METADATA_LOCAL_HOSTNAME

- Public IP address
com.wowza.amazonaws.ec2.AWSEC2_METADATA_PUBLIC_IPV4

- S3 manifest path
com.wowza.amazonaws.ec2.AWSEC2_METADATA_AMI_MANIFEST_PATH

- Instance reservation ID
com.wowza.amazonaws.ec2.AWSEC2_METADATA_RESERVATION_ID

- AMI ID
com.wowza.amazonaws.ec2.AWSEC2_METADATA_AMI_ID

- List of ancestor IDs
com.wowza.amazonaws.ec2.AWSEC2_METADATA_ANCESTOR_AMI_IDS

- Kernel ID
com.wowza.amazonaws.ec2.AWSEC2_METADATA_KERNEL_ID

- Availability zone
com.wowza.amazonaws.ec2.AWSEC2_METADATA_AVAILABILITY_ZONE

- Public keys
com.wowza.amazonaws.ec2.AWSEC2_METADATA_PUBLIC_KEYS

- RAM disk ID
com.wowza.amazonaws.ec2.AWSEC2_METADATA_RAMDISK_ID
```

Note

To learn more about Wowza Streaming Engine module development, download and install the Wowza Eclipse software update.

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Startup Package Reference

This section describes the commands that can appear in a startup manifest file (**startup.xml**). The three commands are **<Install>**, **<Download>**, and **<RunScript>**.

Command <Install>

The **<Install>** command copies the contents of a folder that's contained in the startup package to the Wowza Streaming Engine software installation folder **/usr/local/WowzaStreamingEngine**.

```
<Install>
      <Folder>[relative-directory-path]</Folder>
</Install>
```

Element <Install>/<Folder>

The **<Folder>** element specifies a folder in the startup package that's copied to the Wowza Streaming Engine installation folder. The folder's directory structure should be the same as the Wowza Streaming Engine installation folder. The specified directory path is relative to the startup package root.

For example, if you have a startup package with the following structure:

```
[startup-package]
      startup.xml
      [wowza]
            [applications]
                  [myapp]
            [conf]
                  Server.license
                  [myapp]
                        Application.xml
      [tuning]
            tune.sh
```

And the **startup.xml** file content is:

```
<Startup>
      <Commands>
            <Install>
                  <Folder>wowza</Folder>
            </Install>
            <RunScript>
                  <Script>tuning/tune.sh</Script>
            </RunScript>
      </Commands>
</Startup>
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

The contents of the **wowza** folder are copied to the **/usr/local/WowzaStreamingEngine** folder of the running Wowza Streaming Engine instance. In this example, the result is that the application **myapp** is created and it uses the **wowza/conf/myapp/Application.xml** configuration file.

Command <Download>

The **<Download>** command downloads content from a web server and saves it to the local instance. The **<Download>** command includes the following elements:

```
<Download>
      <URL>[URL]</URL>
      <Data>[data]</Data>
      <Header><Name>[key-name]</Name><Value>[value]</Value></Header>
      <Header><Name>[key-name]</Name><Value>[value]</Value></Header>
      <Destination>[relative-or-absolute-file-path]</Destination>
      <Action>[UNZIP, INSTALL]</Action>
</Download>
```

The only required elements are **<URL>** and **<Destination>**. To download **http://www.mycompany.com/myfile.zip**, save it to the local computer at the location **/opt/myfile.zip**, and then unzip the downloaded file, the command is:

```
<Download>
      <URL>http://www.mycompany.com/myfile.zip</URL>
      <Destination>/opt/myfile.zip</Destination>
      <Action>UNZIP</Action>
</Download>
```

When completed, the extracted contents are located at **/opt/myfile**.

For this example, let's say that you have two **.jar** files (**wms-plugin-modulea.jar** and **wms-plugin-moduleb.jar**) and that you want to set up two applications (**live** and **vod**). Let's also assume that you're using the **LicKey** licensing option, which requires you to supply your own **Server.license** file. First, create the following directory structure:

```
[wowzamodules]
      [applications]
            [live]
            [vod]
      [conf]
            Server.license
            [live]
                  Application.xml
            [vod]
                  Application.xml
      [lib]
            wms-plugin-modulea.jar
            wms-plugin-moduleb.jar
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Next, place the **[wowzamodules]** folder into a compressed (zipped) folder named **wowzamodules.zip** and copy it to your company's web server. Let's assume that this file is now available at **http://www.mycompany.com/modules/wowzamodules.zip**. The **<Download>** command to install this package into the Wowza Streaming Engine **lib** folder is:

```
<Download>
      <URL>http://www.mycompany.com/modules/wowzamodules.zip</URL>
      <Destination>/lib/wowzamodules.zip</Destination>
      <Action>INSTALL</Action>
</Download>
```

Element <Download>/<URL>

The **<URL>** element is the URL of the file to be downloaded. The download can be performed over Secure Sockets Layer (SSL) by using the URL prefix **https://** instead of **http://**. The URL can also contain query parameters. The file is downloaded using the GET method, unless **<Data>** is specified.

Element <Download>/<Data>

The **<Data>** element is text data that's included as part of the HTTP request body. You can use POST data to send user name and password information to your web server so that you can protect your content.

Element <Download>/<Header>: <Name> and <Value>

The **<Header>** elements are name-value pairs that are added to the header part of the HTTP request. For example:

```
<Header>
      <Name>Content-type</Name>
      <Value>text/plain</Value>
</Header>
```

You can use **<Header>** data to protect your content. For example, you can use the header values to specify a user name and password using BASIC authentication:

```
<Header>
      <Name>Authorization</Name>
      <Value>Basic dXNlcm5hbWU6cGFzc3dvcmQ=</Value>
</Header>
```

Element <Download>/<Destination>

The **<Destination>** element is the path to the location where the file is saved (including the filename). This path can be relative or absolute. When calculating a relative file path, the base directory is the root directory of the startup package (the folder that contains the **startup.xml** file).

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Element <Download>/<Action>

The **<Action>** element defines the action performed after the file is downloaded. The action can be either **UNZIP** or **INSTALL**. If the action is **UNZIP**, the downloaded file is unzipped using the UNZIP command. If the action is **INSTALL**, the downloaded file is unzipped and the folder contents are copied to the Wowza Streaming Engine installation folder **/usr/local/WowzaStreamingEngine**.

Command <RunScript>

The **<RunScript>** command executes a script on a running instance. For example:

```
<RunScript>
      <Script>[relative-or-absolute-file-path]</Script>
      <Param>[parameter]</Param>
      <Param>[parameter]</Param>
</RunScript>
```

Element <RunScript>/<Script>

The **<Script>** element is the path to the script file to be executed. This path can be relative or absolute. When calculating a relative file path, the base directory is the root directory of the startup package (the folder that contains the **startup.xml** file).

Element <RunScript>/<Param>

The **<Param>** elements are parameters that are passed to the running script. For example, the following **<RunScript>** command:

```
<RunScript>
      <Script>scripts/copyfile.sh</Script>
      <Param>filea.txt</Param>
      <Param>fileb.txt</Param>
</RunScript>
```

Is equivalent to executing the following command:

```
./scripts/copyfile.sh filea.txt fileb.txt
```

Before a script is executed, the startup processor initializes the following environment variables with information that describes the current instance:

```
AWSEC2_METADATA_INSTANCE_ID          - Amazon instance id
AWSEC2_METADATA_SECURITY_GROUPS      - Security group
AWSEC2_METADATA_LOCAL_IPV4           - Local IP address
AWSEC2_METADATA_AMI_LAUNCH_INDEX     - Launch index
AWSEC2_METADATA_PUBLIC_HOSTNAME      - Public host name
AWSEC2_METADATA_PRODUCT_CODES        - DevPay product code
AWSEC2_METADATA_INSTANCE_TYPE        - Instance type (ex. t2-small)
AWSEC2_METADATA_HOSTNAME             - Public host name
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

```
AWSEC2_METADATA_LOCAL_HOSTNAME        - Local host name
AWSEC2_METADATA_PUBLIC_IPV4           - Public IP address
AWSEC2_METADATA_AMI_MANIFEST_PATH     - S3 manifest path
AWSEC2_METADATA_RESERVATION_ID        - Instance reservation ID
AWSEC2_METADATA_AMI_ID                - AMI ID
AWSEC2_METADATA_AVAILABILITY_ZONE     - Availability zone
AWSEC2_METADATA_PUBLIC_KEYS           - Public keys
AWSEC2_METADATA_ANCESTOR_AMI_IDS      - Ancestor AMI IDs
AWSEC2_METADATA_RAMDISK_ID            - RAM disk ID
AWSEC2_METADATA_BLOCK_DEVICE_MAPPING  - Block device mapping
AWSEC2_METADATA_KERNEL_ID             - Kernel ID
```

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.

Additional Resources

Amazon EC2 Overview

Amazon Web Services Support Center

Wowza Streaming Engine for Amazon EC2 Support Center

Copyright © 2007–2015 Wowza Media Systems™, LLC. All rights reserved.