

Sputnik Installation and Configuration Guide

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2 Introduction

Sputnik is Teradek's interface between Bond and your streaming destination. Sputnik is designed to run on a Linux computer either in the cloud (using Amazon's EC2 services) or on a local server with a single, publically addressable TCP port. For Amazon EC2 configuration, start with Creating an Amazon EC2 instance for Sputnik, page **3**.

3 Installing Sputnik (Local Linux Machine)

- 1. Download the Sputnik RPM file. This package contains the Sputnik binaries and configuration files.
- 2. Open your file browser and navigate to the directory containing the Sputnik RPM.
- 3. Double click to open your package manager and follow prompts to install Sputnik.
- 4. You will be prompted for an administrator password to complete the installation.

Note: As of Sputnik version 1.0, the following Linux distributions have been tested:

- Fedora 13
- Fedora 14
- Fedora 15
- Amazon Linux 2011
- Enterprise Linux 6 (CentOS 6)
- Debian (Stable)

4 Sputnik Operation

- 1. To start Sputnik: sudo service sputnik start
- 2. To stop Sputnik: sudo service sputnik stop
- 3. To restart Sputnik: sudo service sputnik restart

4. Sputnik Dashboard: Access the sputnik dashboard by entering Sputnik's IP address (or host name) and web server port in your browser. For example, if Sputnik's IP address is 192.168.1.200 and it is using the default web server port (1957), access the dashboard by entering 'http://192.168.1.200:1957' in your web

browser.

The Sputnik Dashboard displays statistics and information about connected modems' throughput, round trip delay, and data usage. In addition, Sputnik's buffer statistics and uptime are displayed. A restart button is also present on the Dashboard.



- 5. Sputnik log file location: /var/log/sputnik.log (to view Sputnik's output while it is running, use 'tail -f /var/log/sputnik.log')
- 6. Sputnik configuration file location: /etc/sputnik.conf
 - i. Sputnik's configuration file contains two options listening port and web server port. Sputnik must be restarted after any changes are made to the configuration.
 - ii. Listening Port: Default is 5111. This option allows you to specify the TCP port that Sputnik uses to listen for connections from Bond devices.
 - iii. Web Server Port: Default is 1957. This option specifies the port to be used by the web server running Sputnik's dashboard.

5 Creating an Amazon EC2 instance for Sputnik

- 1. go to: https://console.aws.amazon.com/s3/home
- 2. Log in to your account, or sign up if you have not done so already.
- 3. Click the 'Amazon EC2' tab.

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Elastic Beanstalk S3	EC2 VPC		Elastic MapReduce	CloudFron	t CloudFormation	RDS	ElastiCache	SQS I.	AM SNS	SES	Route 53	DynamoDB		
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	0	us-east-1d			vailability zone is perating normally									
	0	us-east-1e			vailability zone is perating normally									

- 4. Select the appropriate Region on the left navigation pane.
- 5. Set up a new Security Group if you have not done so already. See Configuring your EC2 Instance's Security Settings, page **7** for details.
- 6. Select 'Instances' in the navigation pane.
- 7. Click the large 'Launch Instance' button.

elect an option below:	
La	unch with the Classic Wizard
Classic Wizard	
Launch an On-Demand or Spot instance using the classic wizard with fine- grained control over how it is launched.	
	Request Instances Wizard Canad (8)
	CONSIST ANALYSIS INTERCED CONTRACT OFFICE ANALYSIS INTERCED
Quick Launch Wizard	Chonse an Amazon Hackine Image (AHD) from one of the tabled lists below by cloking its Select button. Ontick Start My ANIS Community ANIS
Launch an On-Demand instance using an editable, default configuration so that	Raide 22-bit Amazon Linux AMI 2021.02.1 Beta (AMI 50: an-Relifect) Anamon Linux AMI 202 2021.02.1 (BED box), 22-bit architecture with Amazon Red Beneficies Scient 0.0
you can get started in the cloud as quickly as possible.	Baile 6- bit Anasces linux AMI 2011.02.1 Bate (AMI 65 and be15e/c?) Monator Linux AMI Earn 2011.02.1 (EEF boot, 64 bit architecture with Amazon Rott Device State 1 Co
	Red Hat Enterprise Linux 6.3 32 bit (666 Md ani 60004246) Red Hat Enterprise Linux version 6.3, EBS-bood, 32-bit architecture.
	Red Hat Enterprise Linux 6.3 64 bit (44K tot: ami-5e637037) Modux: Red Hat Enterprise Linux version 6.3, EBS-5eeet, 64-bit architecture.
	UNE Lines Letterphic Server 11.41-Hit (MM 16: smi-e133760) DOLL Lunc Hofpmins Server 11.04-Hit (MM 16: smi-e133760) South Lunc Lines and Lines And Tools pressultate. Apache 23, Hy5QL 5.0, Ben Lines Server Server 15: 00 Ben Lines Server Server Server 15: 00 Ben Lines Server Server
	🚖 Free tier eligible if used with a micro instance. See AMAS free tier for complete details and terms.

- 8. Select 'Launch Classic Wizard.'
- 9. Select the 'Community AMIs' tab and wait for the AMI List to load.
- 10. Select 'Amazon Images' in the 'Viewing' dropdown.
 - a. Search for 'amzn-ami-2011.'
 - b. Choose an i386 ami with 'instance-store' as the root device. Click the 'Select' button next to your chosen AMI. Your AMI name will look something like 'amzn-ami-2011.09.02.i386-xx....xx.' The "xx...xx" after the i386- varies depending on Region selected.
 Note: The i386 ami instance allows you to select a "small" instance. The others will force a larger and higher cost instance.

0				
HOOSE AN AMI	STANCE DETAILS	CREATE KEY PAIR CONFIGURE FIREWALL R	EVIEW	
Choose an Amazon	Machine Image (AMI) from one of the tabbed lists below by clicking its	Select button.	
Quick Start My	AMIs Com	nunity AMIs		
liewing: Amazon li	mages 🗧	amzn-ami-2011	≪ ≪ 1	to 12 of 12 Items 📎 📎
AMI ID	Root Device	Manifest	Platform	
📄 ami-9f4082f6	instance store	amzn-ami-us-east-1/amzn-ami-2011.09.1.i386.manif	🎁 Amazon Linux	Select ≥
ami-954082fc	instance store	amzn-ami-us-east-1/amzn-ami-2011.09.1.x86_64.m	🎁 Amazon Linux	Select ≥
📄 ami-4b814f22	instance store	amzn-ami-us-east-1/amzn-ami-2011.09.2.i386.manif	🎁 Amazon Linux	Select ≥
📄 ami-41814f28	instance store	amzn-ami-us-east-1/amzn-ami-2011.09.2.x86_64.m	🎁 Amazon Linux	Select ≥
ami-2a1fec43	instance store	amzn-ami-us-east-1/amzn-ami-2011.02.1.i386.manif	🎁 Amazon Linux	Select ≥
ami-221fec4b	instance store	amzn-ami-us-east-1/amzn-ami-2011.02.1.x86_64.ma	🎁 Amazon Linux	Select ≥
ami-8e1fece7	ebs	amazon/amzn-ami-2011.02.1.x86_64-ebs	🎁 Amazon Linux	Select 🔁
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📄 ami-7341831a	ebs	amazon/amzn-ami-2011.09.1.x86_64-ebs	🎁 Amazon Linux	Select 🔽
ami-31814f58	ebs	amazon/amzn-ami-2011.09.2.i386-ebs	Amazon Linux	Select

- 11. Choose your instance details. These details affect the pricing and resources available to you.
 - a. For one or two encoders streaming to Sputnik, the 'm1.small' instance type should be sufficient.
 - b. Select the default "Launch Instances" based on preferred Availability Zone or "No Preference".

lequest Instances W	Wizard		Cancel
× (0		
100SE AN AMI INSTANC	CE DETAILS CREATE KEY PAIR	CONFIGURE FIREWALL REVIEW	
Provide the details for you instances.	ur instance(s). You may also de	ecide whether you want to launch your instances as "on-de	mand" or "spot"
Number of Instances:	1 Instance Type:	Small (m1.small, 1.7 GB)	•
Note, launching a t1.mic	cro instance requires that you	select an AMI with an EBS-backed root device.	
• Launch Instances	s		
Launch into:	• EC2 Availability Zone:	No Preference ÷	
Request Spot Ins	stances		

12. Skip the 'Advanced Instance Options' by selecting Continue.

Request Test	tances Wizard	Canori 3
~	0	
CHOOSE AN AMI	INSTANCE DETAILS CREATE REY PARE CONFIGURE REINALL REVEN	
Number of In	Istances: 1	
Availability Zo	one: No Preference	
Advanced I	instance Options	
Here you can o Monitoring or e	hoose a specific kernel or RAM dak to use with your instances. You can also choose to enable CloudWatch Detailed inter data that will be available from your instances once they launch.	
Kernel ID:	Use Default 1 RAH Disk ID: Use Default 1	
Monitoring:	 Enable CloudWatch detailed monitoring for this instance (additional charges will apply) 	
User Data:		
	base64 encoded	
Termination Protection:	Prevention against accidental formination.	
< Back	Continue	

13. Add a name to your instance by specifying it next to 'Name' in the 'Value' column on the tags page.

HOOSE AN AMI	INSTANCE DETAILS	CREATE KEY PAIR	CONFIGURE FIREWALL	REVIEW	
ase-sensitive	key/value pair, are	stored in the clou	id and are private to yo sources. For example, y	ur account. You can cr ou could define a tag	
	erver. You can add ion, go to Using Ta		ys to each instance alo Guide.	ng with an optional va	lue for each key. For
nore informati				-	lue for each key. For Remove
nore informati	ion, go to Using Ta		Guide.	-	

14. Create a Key-Pair. In this case we have entered 'TeradekBond' as an example.

Request Instances Wizard		Cancel 🗙
CHOOSE AN AMI INSTANCE DETAILS CR	EATE KEY PAIR CONFIGURE FIREWALL REVIEW	
Create & Download your Key Pair. You	ely connect to your instance after it launches. To create a key pair, enter a name and will then be prompted to save the private key to your computer. Note, you only nee you want to deploy an Amazon EC2 instance.	
⊖ Choose from your existing Ke	y Pairs	
Oreate a new Key Pair		
1. Enter a name for your key pair:*	TeradekBond (e.g., jdoekey)	
2. Click to create your key pair:*	Reate & Download your Key Pair	
	Save this file in a place you will remember. You can use this key pair to launch other instances in the future or visit the Key Pairs page to create or manage existing ones.	
O Proceed without a Key Pair		
Back	Continue	

- 15. Download the '.pem' permissions file. This file is required for SSH access to your Sputnik server. The permissions file can only be downloaded once from Amazon, so it may be wise to create a backup of the file. Note you will use this file later in the process.
- 16. Select the Security Group you configured in step 5 or configure a new one according to Configuring your EC2 Instance's Security Settings if you haven't already. Click Continue.

Request Inst	tances Wizard				Cancel 🗵
¥	¥	V	0		
CHOOSE AN AMI	INSTANCE DETAILS	CREATE KEY PAIR	CONFIGURE FIREWALL	REVIEW	
can help you cr		roup to allow access	to your instances using th	ances. You may use an existing s he suggested ports below. Add a	
• Choose o	ne or more of yo	our existing Secu	irity Groups		
sg-d860b6b1 -	Example Security Grou default ups: sg-ec4feb84)	19			
O Create a	new Security Gro	up			
< Back			Continue		

17. Review your settings and then click 'Launch.' After a short while your new EC2 instance will show as running in the Instances section of the AWS Management Console. Close the Launch Instance Wizard.

	Teradek EC2 Bond Instance	🥃 i-ed1dde8a	ami-4b814f22	instance store	m1.small	running	🥝 2/2 checks p	none
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- 18. To give your EC2 instance a fixed address.
 - a. In the Navigation bar Navigate to the 'Elastic IPs' section
 - b. Click the 'Allocate New Address' button and confirm by clicking 'Yes, allocate' (make sure 'EC2' is selected).

Add	Addresses									
@ •	😪 Allocate New Address 😵 Release Address 🖉 Associate Address 😥 Disessociate Address 😨 Kefresh 😨 Refresh 😨 Help									
Viewi	ing: All Addresses	\$ Sear	ch			≪ ≪ 1 to 11 of 11 Items >> >>				
	Address	Instance ID	ENI ID	Scope	Public DNS					
	23.21.123.44			standard						

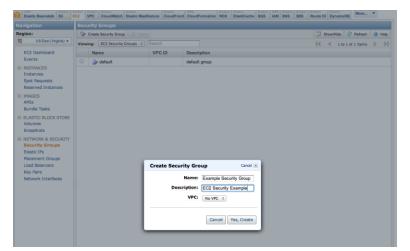
19. Select the newly listed Address listing and click the 'Associate Address' button. Select your newly created instance and click 'Yes, Associate.'

Associat	e Address	Cancel 🗙
Select the address to	instance to which you wish to associate	this IP
Instance:	Select an instance \$	
	Cancel Yes, A	Associate

- 20. Your Amazon EC2 instance should now be running and ready for Sputnik installation.
- 21. NOTE: For the most up-to-date documentation, consult Amazon's 'Get Started with EC2' guide, located at http://docs.amazonwebservices.com/AWSEC2/latest/GettingStartedGuide/

6 Configuring your EC2 Instance's Security Settings

- 1. Select 'Security Groups.'
- 2. Click 'Create Security Group.'



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3. Enter a name and description for your security group. Make sure 'No VPC' is selected and click 'Yes, Create.'

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			t CloudFormation RDS ElastCache SQS					
ion	Security Groups							
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ANCES	 Example Security Gro default 	.9	EC2 Security Example default group					
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						🥒 Secu	rity Group	Example Security Group
						Details	Inbound	
						Group	Name:	Example Security Group
					Group I	D:	sg-ec4feb84	
			Security Group: Example Security Group			Group ID.		59 66 11656 1
		ample Security	aloop			Course Descriptions		ECO Converte Evenerale
	Details Inbound					Crown P	locarintion -	EC2 Cocurity Example
	Details Inbound Group Name:	Example Securi				Group D	escription:	EC2 Security Example
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4. Select the 'Inbound' tab

1 Security Grou	ıp selected			
Securit	y Group: Example Security Group			
Details Ir	Details Inbound			
Create a new rule:	Custom TCP rule \$			
Port range:	(e.g., 80 or 49152-65535)			
Source:	0.0.0.0/0 (e.g., 192.168.2.0/24, sg-47ad482e, or 1234567890/default)			
	Apply Rule Changes			

- a. Select 'Custom TCP rule.'
- b. Enter 5111 in the 'Port range' field . This is the default port used for connections between Bond and Sputnik.
- c. Click 'Add Rule.'
- d. With 'Custom TCP rule' selected, add another rule for port 1957, the default web server port for Sputnik. If you are using a different port (See section 4, step 6), make sure that your configured web server port matches the rule created here.
- 5. Add a third rule under 'Create a new rule'. This is required to access your EC2 instance to start, stop, or configure Sputnik.

- a. Select 'SSH' for 'Create a new rule.'
- b. Click 'Add Rule.'
- c. After adding the rules, the listing on the right should look similar to the following:

Create a	Custom TCP rule	ТСР		
new rule:		Port (Service)		
Port range:		5111	0.0.0/0	Delete
	(e.g., 80 or 49152-65535)	1957	0.0.0/0	Delete
Source:	0.0.0.0/0	22 (SSH)	0.0.0/0	Delete
	(e.g., 192.168.2.0/24, sg-47ad482e, or 1234567890/default)			
Your	changes have not been applied yet			

d. Click 'Apply Rule Changes' at the bottom of the Security Group pane.

7 Installing Sputnik (EC2)

Download the Sputnik RPM file. This package contains the Sputnik binaries and configuration files. For convenience, save the RPM file to the same directory as your permissions file (Creating an Amazon EC2 instance for Sputnik, step 13).

Installing Sputnik requires the use of a terminal program. On Mac this can be found in the 'Utilitities' folder within Applications:



- 1. Mac/Linux users -- open a terminal and navigate to the directory where your permissions file is saved.
 - a. Replace <pem-file-location> with the path to your permissions file.

\$ cd <pem-file-location>

- 2. Modify the permissions of the .pem file using chmod.
 - a. Replace <pem-file.pem> with the permissions file name.

\$ chmod 400 <pem-file.pem>

- 3. Using scp, copy the file to your EC2 instance.
 - a. You will need to use the IP address configured in Creating an Amazon EC2 instance for Sputnik, steps 16 and 17.

	23.21.123.44	i-ed1dde8a (Teradek EC2 Bond Instance)
_		1

b. Replace <pem-file.pem> with the permissions file name, <sputnik-rpm> with the Sputnik RPM name (and path if not in the same directory), and <ip-address> with the address of your EC2 instance.

```
$ scp -i <pem-file.pem> <sputnik-rpm> ec2-user@<ip-address>:~/
```

- 4. Connect via SSH to your Amazon EC2 instance.
 - a. SSH allows you to log into your EC2 instance in the cloud to begin the installation process.
 - b. Replace <pem-file.pem> with the permissions file name and <ip-address> with the address of your EC2 instance.

```
$ ssh -i <pem-file.pem> ec2-user@<ip-address>
```

- 5. If you are prompted, type 'yes' to continue.
- 6. Install Sputnik using yum.
 - a. yum installs Sputnik on the EC2 instance.
 - b. Replace <sputnik-rpm> with the Sputnik RPM name.
 - \$ sudo yum -y localinstall <sputnik-rpm>
- 7. Once installed, start Sputnik.
 - \$ sudo service sputnik start
- 8. See Sputnik Operation (Section 4) for more information on configuring and running Sputnik.

NOTE: type ls to view the contents of your current directory, this will display the RPM name, among other things.