

Развертывание WCS при помощи CloudFormation

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Описание

AWS CloudFormation позволяет развертывать наборы облачных серверов по заданному шаблону. Таким образом, например, можно развернуть простейшую CDN. Обновление WCS до последней сборки и настройка конкретного экземпляра при этом проводятся при помощи UserData скриптов.

Пример шаблона CloudFormation для развертывания CDN

Ниже приводится пример шаблона CloudFormation для развертывания простейшей CDN из двух WCS серверов: Origin и Edge. При этом:

- в качестве базового образа может быть выбран либо [образ WCS из AWS Marketplace](#), либо образ Amazon Linux 2, Ubuntu 18.04 и [други х поддерживаемых ОС](#)
- при необходимости, устанавливается Java 14
- при необходимости, устанавливается либо обновляется WCS до последней сборки

CloudFormation example template to deploy WCS CDN of one Origin and one Edge

```
AWSTemplateFormatVersion: "2010-09-09"
Description: "Create WCS CDN stack"
Parameters:
  KeyName:
    Description: "Name of an existing EC2 KeyPair to enable SSH access to the instance"
    Type: AWS::EC2::KeyPair::KeyName
    ConstraintDescription: "must be the name of an existing EC2 KeyPair"
  InstanceName:
    Description: "Name of EC2 instance"
    Type: String
    ConstraintDescription: "must be a valid EC2 instance string name"
  InstanceType:
    Description: "Basic EC2 instance type"
    Type: String
    Default: m5.xlarge
    AllowedValues: [t1.micro, t2.nano, t2.micro, t2.small, t2.medium, t2.large,
      m1.small, m1.medium, m1.large, m1.xlarge,
      m2.xlarge, m2.2xlarge, m2.4xlarge,
      m3.medium, m3.large, m3.xlarge, m3.2xlarge,
      m4.large, m4.xlarge, m4.2xlarge, m4.4xlarge, m4.10xlarge, m5.xlarge,
      c1.medium, c1.xlarge, c3.large, c3.xlarge, c3.2xlarge, c3.4xlarge, c3.8xlarge,
      c4.large, c4.xlarge, c4.2xlarge, c4.4xlarge, c4.8xlarge,
      g2.2xlarge, g2.8xlarge, r3.large, r3.xlarge, r3.2xlarge, r3.4xlarge, r3.8xlarge,
      i2.xlarge, i2.2xlarge, i2.4xlarge, i2.8xlarge,
      d2.xlarge, d2.2xlarge, d2.4xlarge, d2.8xlarge,
      hi1.4xlarge, hs1.8xlarge, cr1.8xlarge, cc2.8xlarge, cg1.4xlarge]
    ConstraintDescription: "must be a valid EC2 instance type"
  ImageId:
    Description: "Basic instance ami (WebCallServer 5.2.944 AMI by default, mapped by region)"
    Type: String
    Default: WCSAMI
    ConstraintDescription: "must be a valid AMI ID"
  VpcId:
    Type: String
    Description: "VpcId of your existing Virtual Private Cloud (VPC)"
  SubnetId:
    Type: String
    Description: "SubnetId of an existing subnet in your Virtual Private Cloud (VPC)"
  SSHLocation:
    Description: "The IP address range that can be used to SSH to the EC2 instances"
    Type: String
    MinLength: 9
    MaxLength: 18
    Default: 0.0.0.0/0
```

```

AllowedPattern: (\d{1,3})\.\(\d{1,3})\.\(\d{1,3})\.\(\d{1,3})/(\d{1,2})
ConstraintDescription: "must be a valid IP CIDR range of the form x.x.x.x/x"
JavaHeapSize:
  Description: "Maximum Java heap size in megabytes (2048m) or gigabytes (2g), 1024m by default"
  Type: String
  Default: 1024m
UpdateWCS:
  Description: "Update WCS to the latest build"
  Type: String
  Default: true
  ConstraintDescription: "must be true or false"
WCSLicense:
  Description: "WCS License key to activate (optional, if you do not use Marketplace AMI)"
  Type: String
  Default: ""
InstallJava:
  Description: "Java installation helper script. Do not change in wizard!"
  Type: String
  Default: |
    JAVA_CMD=`command -v java 2>/dev/null`
    if [[ -z $JAVA_CMD ]]; then
      rm -rf jdk*
      curl -s https://download.java.net/java/GA/jdk14.0.1/664493ef4a6946b186ff29eb326336a2/7/GPL/openjdk-
14.0.1_linux-x64_bin.tar.gz | tar -zx
      if [ -d jdk-14.0.1/bin ]; then
        mkdir -p /usr/java
        [ -d /usr/java/jdk-14.0.1 ] && rm -rf /usr/java/jdk-14.0.1
        mv -f jdk-14.0.1 /usr/java
        if [ -d /usr/java/jdk-14.0.1/bin ]; then
          rm -f /usr/java/default
          ln -sf /usr/java/jdk-14.0.1 /usr/java/default
          update-alternatives --install /usr/bin/java java /usr/java/jdk-14.0.1/bin/java 1
          update-alternatives --install /usr/bin/jstack jstack /usr/java/jdk-14.0.1/bin/jstack 1
          update-alternatives --install /usr/bin/jcmd jcmd /usr/java/jdk-14.0.1/bin/jcmd 1
          update-alternatives --install /usr/bin/jmap jmap /usr/java/jdk-14.0.1/bin/jmap 1
          update-alternatives --set java /usr/java/jdk-14.0.1/bin/java
          update-alternatives --set jstack /usr/java/jdk-14.0.1/bin/jstack
          update-alternatives --set jcmd /usr/java/jdk-14.0.1/bin/jcmd
          update-alternatives --set jmap /usr/java/jdk-14.0.1/bin/jmap
          echo "JDK 14 installed" >> $DEPLOY_LOG
        fi
      fi
    fi
StopPreviousWCS:
  Description: "Stop previously running WCS helper script. Do not change in wizard!"
  Type: String
  Default: |
    PID=`pgrep -f 'com.flashphoner.server.Server' | grep -v bash`
    if [ -n "$PID" ]; then
      systemctl stop webcallserver
    fi
UpdateToLatestWCS:
  Description: "WCS update to latest build helper script. Do not change in wizard!"
  Type: String
  Default: |
    # Check if WCS is installed, and install latest build if not
    if [ ! -f /usr/local/FlashphonerWebCallServer/bin/webcallserver ]; then
      echo "No WCS installed, will install latest build" >> $DEPLOY_LOG
      UPDATE=true
    fi
    echo "Update WCS: $UPDATE" >> $DEPLOY_LOG
    if $UPDATE; then
      cd /tmp
      wget --timeout=10 --no-check-certificate https://flashphoner.com/download-wcs5.2-server.tar.gz -O wcs5-
server.tar.gz
      if [ $? -eq 0 ]; then
        mkdir -p FlashphonerWebCallServer-5.2-latest && tar xzf wcs5-server.tar.gz -C
FlashphonerWebCallServer-5.2-latest --strip-components 1
        cd FlashphonerWebCallServer-5.2-latest
        chmod +x install.sh
        ./install.sh -silent

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    cd ..
    rm -rf FlashphonerWebCallServer-5.2-latest wcs5-server.tar.gz
    echo "WCS updated to build $(cat /usr/local/FlashphonerWebCallServer/conf/WCS.version)" >> $DEPLOY_LOG
fi
fi
ConfigureWCS:
Description: "WCS configuration helper script. Do not change in wizard!"
Type: String
Default: |
# Request keyframes from WebRTC publishers every 5 seconds
echo -e "\n" >> $WCS_CONFIG
echo -e "periodic_fir_request=true" >> $WCS_CONFIG
# Disable RTMP keepalives to publish from OBS
echo -e "keep_alive.enabled=websocket,rtmfp" >> $WCS_CONFIG
# Configure heap settings
sed -i -e "s/^\(-Xmx\).*\$/\1$HEAP_SIZE/" $JVM_CONFIG
sed -i -e "s/^\(-Xms\).*\$/\1$HEAP_SIZE/" $JVM_CONFIG
ActivateWCS:
Description: "WCS activation helper script. Do not change in wizard!"
Type: String
Default: |
if [[ ! -z $LICENSE ]]; then
/usr/local/FlashphonerWebCallServer/bin/activation.sh $LICENSE
fi
StartWCS:
Description: "WCS startup helper script. Do not change in wizard!"
Type: String
Default: |
systemctl restart webcallserver
# Disable internal firewall, ports are allowed/blocked on security group level
iptables -F
chown ec2-user $DEPLOY_LOG
OriginCDNSSetup:
Description: "WCS Origin intstance setup helper script. Do not change in wizard!"
Type: String
Default: |
echo -e "\n" >> $WCS_CONFIG
echo -e "cdn_enabled=true" >> $WCS_CONFIG
echo -e "cdn_ip=0.0.0.0" >> $WCS_CONFIG
echo -e "cdn_point_of_entry=" >> $WCS_CONFIG
echo -e "cdn_role=origin" >> $WCS_CONFIG
echo -e "cdn_nodes_resolve_ip=false" >> $WCS_CONFIG
EdgeCDNSSetup:
Description: "WCS Edge intstance setup helper script. Do not change in wizard!"
Type: String
Default: |
echo -e "\n" >> $WCS_CONFIG
echo -e "cdn_enabled=true" >> $WCS_CONFIG
echo -e "cdn_ip=0.0.0.0" >> $WCS_CONFIG
echo -e "cdn_point_of_entry=$ORIGIN_IP" >> $WCS_CONFIG
echo -e "cdn_role=edge" >> $WCS_CONFIG
echo -e "cdn_nodes_resolve_ip=false" >> $WCS_CONFIG
Mappings:
WCSAMI:
eu-north-1:
AMI: ami-0cd89cf8212fd90b4
ap-south-1:
AMI: ami-0861cf9f8d387a5cf
eu-west-3:
AMI: ami-0f5d7f6dcdf0910e0
eu-west-2:
AMI: ami-0d61a966487038aeb
eu-west-1:
AMI: ami-01c249ebee9077dbc
ap-northeast-2:
AMI: ami-023e68299437cbf78
ap-northeast-1:
AMI: ami-0f01e9f19c3733d99
sa-east-1:
AMI: ami-01d3d7a07e6e5beda
ca-central-1:

```

```

AMI: ami-0aa76aec8c64e3d52
ap-southeast-1:
AMI: ami-044fd54e788e44ddc
ap-southeast-2:
AMI: ami-0a4f9a18ad123d2ad
eu-central-1:
AMI: ami-0f785dd5a9571d373
us-east-1:
AMI: ami-038f9ebb3c87f88ac
us-east-2:
AMI: ami-0636213ac22f6ef45
us-west-1:
AMI: ami-0de64b6cac0f8d81c
us-west-2:
AMI: ami-0c8543b7418393ad5
Conditions:
GetMarketplaceImage:
Fn::Equals:
- Ref: 'ImageId'
- WCSAMI
Resources:
WCSOriginInstance:
Type: AWS::EC2::Instance
Properties:
Tags:
- Key: "Name"
Value:
Fn::Join:
- '-'
- - !Ref 'InstanceName'
- "edge"
ImageId: !If [ GetMarketplaceImage, !FindInMap [ WCSAMI, !Ref 'AWS::Region', AMI ], !Ref 'ImageId' ]
InstanceType:
Ref: 'InstanceType'
SubnetId:
Ref: 'SubnetId'
SecurityGroupIds:
- Ref: 'WCSecurityGroup'
KeyName:
Ref: 'KeyName'
Monitoring: false
UserData:
Fn::Base64:
Fn::Sub: |
#!/bin/bash
# Declare variables
UPDATE=${UpdateWCS}
HEAP_SIZE=${JavaHeapSize}
LICENSE=${WCSLicense}
# Declare config files to change
WCS_CONFIG=/usr/local/FlashphonerWebCallServer/conf/flashphoner.properties
JVM_CONFIG=/usr/local/FlashphonerWebCallServer/conf/wcs-core.properties
# Declare deployment log
DEPLOY_LOG=/home/ec2-user/deploy.log
# Install Java 14 if needed
${InstallJava}
# Stop WCS before reconfiguring
${StopPreviousWCS}
# Update WCS to the latest build
${UpdateToLatestWCS}
# Configuration setup
${ConfigureWCS}
# CDN setup
${OriginCDNSetup}
# Activate WCS license if provided
${ActivateWCS}
# Start WCS after reconfiguring
${StartWCS}
WCSEdgeInstance:
Type: AWS::EC2::Instance
DependsOn:

```

```

- WCSOriginInstance
Properties:
Tags:
  - Key: "Name"
    Value:
      Fn::Join:
        - '-'
        - !Ref 'InstanceName'
        - "edge"
ImageId: !If [ GetMarketplaceImage, !FindInMap [ WCSAMI, !Ref 'AWS::Region', AMI ], !Ref 'ImageId' ]
InstanceType:
  Ref: 'InstanceType'
SubnetId:
  Ref: 'SubnetId'
SecurityGroupIds:
  - Ref: 'WCSecurityGroup'
KeyName:
  Ref: 'KeyName'
Monitoring: false
UserData:
  Fn::Base64:
    Fn::Sub: |
      #!/bin/bash
      # Declare variables
      UPDATE=${UpdateWCS}
      HEAP_SIZE=${JavaHeapSize}
      LICENSE=${WCSLicense}
      ORIGIN_IP=${WCSOriginInstance.PrivateIp}
      # Declare config files to change
      WCS_CONFIG=/usr/local/FlashphonerWebCallServer/conf/flashphoner.properties
      JVM_CONFIG=/usr/local/FlashphonerWebCallServer/conf/wcs-core.properties
      # Declare deployment log
      DEPLOY_LOG=/home/ec2-user/deploy.log
      # Install Java 14 if needed
      ${InstallJava}
      # Stop WCS before reconfiguring
      ${StopPreviousWCS}
      # Update WCS to the latest build
      ${UpdateToLatestWCS}
      # Configuration setup
      ${ConfigureWCS}
      # CDN setup
      ${EdgeCDNSetup}
      # Activate WCS license if provided
      ${ActivateWCS}
      # Start WCS after reconfiguring
      ${StartWCS}
WCSecurityGroup:
  Type: AWS::EC2::SecurityGroup
  Properties:
    VpcId:
      Ref: 'VpcId'
    GroupDescription: "Enable SSH, websocket, web interface ports and media ports"
    SecurityGroupIngress:
      - IpProtocol: tcp
        FromPort: 22
        ToPort: 22
        CidrIp:
          Ref: 'SSHLocation'
      - IpProtocol: tcp
        FromPort: 554
        ToPort: 554
        CidrIp: 0.0.0.0/0
      - IpProtocol: tcp
        FromPort: 1935
        ToPort: 1935
        CidrIp: 0.0.0.0/0
      - IpProtocol: tcp
        FromPort: 3478
        ToPort: 3478
        CidrIp: 0.0.0.0/0

```

```

- IpProtocol: tcp
  FromPort: 8080
  ToPort: 8084
  CidrIp: 0.0.0.0/0
- IpProtocol: tcp
  FromPort: 8443
  ToPort: 8445
  CidrIp: 0.0.0.0/0
- IpProtocol: tcp
  FromPort: 8888
  ToPort: 8888
  CidrIp: 0.0.0.0/0
- IpProtocol: tcp
  FromPort: 9091
  ToPort: 9091
  CidrIp: 0.0.0.0/0
- IpProtocol: udp
  FromPort: 30000
  ToPort: 33000
  CidrIp: 0.0.0.0/0
- IpProtocol: tcp
  FromPort: 30000
  ToPort: 33000
  CidrIp: 0.0.0.0/0

```

Outputs:

```

OriginWebsiteURL:
  Description: "URL for newly created WCS Origin instance web interface. Use instance id as admin password"
  Value:
    Fn::Join:
      - ''
      - - "https://"
        - !GetAtt WCSOriginInstance.PublicDnsName
        - ":8444/admin/"
OriginInstanceId:
  Value:
    Ref: 'WCSOriginInstance'
  Description: "Instance Id of newly created WCS Origin instance"
OriginPrivateIp:
  Value: !GetAtt WCSOriginInstance.PrivateIp
  Description: "Private IP address of the Origin instance"
OriginPublicIp:
  Value: !GetAtt WCSOriginInstance.PublicIp
  Description: "Public IP address of the Origin instance"
EdgeWebsiteURL:
  Description: "URL for newly created WCS Edge instance web interface. Use instance id as admin password"
  Value:
    Fn::Join:
      - ''
      - - "https://"
        - !GetAtt WCSEdgeInstance.PublicDnsName
        - ":8444/admin/"
EdgeInstanceId:
  Value:
    Ref: 'WCSEdgeInstance'
  Description: "Instance Id of newly created WCS Edge instance"
EdgePrivateIp:
  Value: !GetAtt WCSEdgeInstance.PrivateIp
  Description: "Private IP address of the Edge instance"
EdgePublicIp:
  Value: !GetAtt WCSEdgeInstance.PublicIp
  Description: "Public IP address of the Edge instance"

```

Пример развертывания WCS CDN по шаблону в веб консоли CloudFormation

1. Войдите в свой аккаунт AWS, перейдите в желаемый регион и откройте CloudFormation в меню Services. Нажмите "Create Stack"

AWS CloudFormation

Model and provision all your cloud infrastructure

AWS CloudFormation provides a common language to describe and provision all the infrastructure resources in your environment in a safe, repeatable way.

Create a CloudFormation stack

Use your own template or a sample template to quickly get started.

Create stack

2. Выберите "Upload a template file", нажмите кнопку "Choose file" и загрузите шаблон

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Create stack

Prerequisite - Prepare template

Prepare template
Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

Template is ready Use a sample template Create template in Designer

Specify template
A template is a JSON or YAML file that describes your stack's resources and properties.

Template source
Selecting a template generates an Amazon S3 URL where it will be stored.

Amazon S3 URL Upload a template file

Upload a template file

No file chosen
JSON or YAML formatted file

S3 URL: *Will be generated when template file is uploaded*

3. После загрузки шаблона, нажмите Next

Upload a template file

wcs-ec2-template-origin-edge.yml
JSON or YAML formatted file

S3 URL: <https://s3.eu-north-1.amazonaws.com/cf-templates-1c0pwbvffxqz0-eu-north-1/20211695zL-wcs-ec2-template-origin-edge.yml>

4. Введите имя набора серверов

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Specify stack details

Stack name

Stack name

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

Parameters

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

5. Введите AMI ID образа Amazon Linux 2 для выбранного региона, или оставьте WCSAMI (в этом случае будет использован образ WCS из AWS Marketplace с почасовой тарификацией)

ImageId
Basic instance ami (WebCallServer 5.2.944 AMI by default, mapped by region)

6. Введите базовую часть имени сервера (к имени будет добавлено -origin и -edge соответственно), выберите тип сервера, введите размер Java heap и выберите ключ SSH доступа к серверу

InstanceName
Name of EC2 instance

InstanceType
Basic EC2 instance type

JavaHeapSize
Maximum Java heap size in megabytes (2048m) or gigabytes (2g), 1024m by default

KeyName
Name of an existing EC2 KeyPair to enable SSH access to the instance

7. Укажите Id подсети

SubnetId
SubnetId of an existing subnet in your Virtual Private Cloud (VPC)

8. Введите "true", чтобы автоматически обновить WCS до последней сборки

UpdateWCS
Update WCS to the latest build

9. Укажите VPC Id

VpcId
VpcId of your existing Virtual Private Cloud (VPC)

10. Если не используется образ WCS из AWS Marketplace, укажите лицензионный ключ для активации и нажмите Next

WCSLicense
WCS License key to activate (optional, if you do not use Marketplace AMI)

Cancel Previous Next

11. При необходимости, добавьте теги и права на запуск серверов

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Configure stack options

Tags
You can specify tags (key-value pairs) to apply to resources in your stack. You can add up to 50 unique tags for each stack. [Learn more](#)

Key Value Remove

Add tag

Permissions
Choose an IAM role to explicitly define how CloudFormation can create, modify, or delete resources in the stack. If you don't choose a role, CloudFormation uses permissions based on your user credentials. [Learn more](#)

IAM role - optional
Choose the IAM role for CloudFormation to use for all operations performed on the stack.

IAM role name Sample-role-name Remove

12. При необходимости, установите дополнительные параметры набора серверов и нажмите Next

Advanced options

You can set additional options for your stack, like notification options and a stack policy. [Learn more](#)

► **Stack policy**
Defines the resources that you want to protect from unintentional updates during a stack update.

► **Rollback configuration**
Specify alarms for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back. [Learn more](#)

► **Notification options**

► **Stack creation options**

Cancel Previous Next

13. Проверьте все параметры набора серверов

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Review wcs-test-stack

Step 1: Specify template Edit

Template

Template URL
https://s3.eu-north-1.amazonaws.com/cf-templates-1c0pwbvffxqz0-eu-north-1/20211695zL-wcs-ec2-template-origin-edge.yml

Stack description
Create WCS CDN stack

[Estimate cost](#)

Step 2: Specify stack details Edit

Parameters (18)

14. Нажмите "Create stack"

Stack creation options

Rollback on failure
Enabled

Timeout
-

Termination protection
Disabled

► [Quick-create link](#)

Cancel Previous Create change set Create stack

15. Дождитесь окончания создания серверов

CloudFormation > Stacks > wcs-test-stack

wcs-test-stack [Delete] [Update] [Stack actions] [Create stack]

Stack info | **Events** | Resources | Outputs | Parameters | Template | Change sets

Events (11)

Search events

Timestamp	Logical ID	Status	Status reason
2021-06-18 14:39:15 UTC+0700	wcs-test-stack	CREATE_COMPLETE	-
2021-06-18 14:39:13 UTC+0700	WCSEdgeInstance	CREATE_COMPLETE	-
2021-06-18 14:39:06 UTC+0700	WCSEdgeInstance	CREATE_IN_PROGRESS	Resource creation Initiated
2021-06-18 14:39:04 UTC+0700	WCSEdgeInstance	CREATE_IN_PROGRESS	-
2021-06-18 14:39:01 UTC+0700	WCSOriginInstance	CREATE_COMPLETE	-
2021-06-18 14:38:54 UTC+0700	WCSOriginInstance	CREATE_IN_PROGRESS	Resource creation Initiated
2021-06-18 14:38:52 UTC+0700	WCSOriginInstance	CREATE_IN_PROGRESS	-
2021-06-18 14:38:50 UTC+0700	WCSSecurityGroup	CREATE_COMPLETE	-
2021-06-18 14:38:47 UTC+0700	WCSSecurityGroup	CREATE_IN_PROGRESS	Resource creation Initiated
2021-06-18 14:38:42 UTC+0700	WCSSecurityGroup	CREATE_IN_PROGRESS	-
2021-06-18 14:38:37 UTC+0700	wcs-test-stack	CREATE_IN_PROGRESS	User Initiated

16. Перейдите на вкладку Outputs

wcs-test-stack [Delete] [Update] [Stack actions] [Create stack]

Stack info | Events | Resources | **Outputs** | Parameters | Template | Change sets

Outputs (8)

Search outputs

Key	Value	Description	Export name
EdgeInstanceid	i-0a15ee908afc525a4	Instance Id of newly created WCS Edge instance	-
EdgePrivateIp	172.31.26.94	Private IP address of the Edge instance	-
EdgePublicIp	13.51.156.51	Public IP address of the Edge instance	-
EdgeWebsiteURL	https://ec2-13-51-156-51.eu-north-1.compute.amazonaws.com:8444/admin/	URL for newly created WCS Edge instance web interface. Use instance id as admin password	-
OriginInstanceid	i-06bb1e29aa40acaee	Instance Id of newly created WCS Origin instance	-
OriginPrivateIp	172.31.18.18	Private IP address of the Origin instance	-
OriginPublicIp	13.51.156.202	Public IP address of the Origin instance	-
OriginWebsiteURL	https://ec2-13-51-156-202.eu-north-1.compute.amazonaws.com:8444/admin/	URL for newly created WCS Origin instance web interface. Use instance id as admin password	-

17. Откройте веб интерфейсы Origin и Edge, опубликуйте на Origin в примере Two Way Streaming поток test и проиграйте этот поток на Edge

