# WCS on Google Cloud Platform

Since build 5.2.679, WCS can be deployed on Google Cloud Platform as standalone media server, CDN with low latency and CDN with load balancing between nodes.

Anyway, before deploying, the following should be prepared:

- an active GCP account and a project in the account
- a WCS license to activate on server/servers
- optionally, domain names to bind to bind to servers static IPs and corresponding SSL certificates

### Server deployment

#### Create and launch VM instance

In Google Cloud console go to Compute Engine - VM instances section and click Create
 VM instance to start VM creation. Choose the server name, datacenter region and zone,
 VM configuration

←	Create an instance						
To cre	ate a VM instance, select one of the options:		Name 📀 Name is permanent				
Ħ	New VM instance Create a single VM instance from scratch	>	test-origin-1 Labels @ (Optional) + Add label				
(±	New VM instance from template Create a single VM instance from an existing template		Region     Ø     Zone     Ø       Region is permanent     Zone is permanent       europe-west3 (Frankfurt)     •     europe-west3-c       Machine configuration				
	New VM instance from machine image Create a single VM instance from an existing machine image		Machine family           General-purpose         Memory-optimized           Machine types for common workloads, optimized for cost and flexibility           Series				
\ <b>∲</b>	Marketplace Deploy a ready-to-go solution onto a VM instance	N1     Powered by Intel Skylake CPU platform or one of its predecessors       Machine type     n1-standard-1 (1 vCPU, 3.75 GB memory)       vCPU     Memory       1     3.75 GB					

2. In Boot disk section click Change. Choose CentOS 7.6 base image

Boot dis	k 🕐							_
	Ne Im O	w 20 GE age CentC	3 standard DS 7	persisten	t disk		Change	
Boot disk Select an image or snapshot to create a boot disk; or attach an existing disk. Can't find what you're looking for? Explore hundreds of VM solutions in Marketplac						is in Marketplace.		
Public images	Public images Custom images Snapshots Existing disks							
Oneration system								
CentOS								
Version CentOS 7								
x86_64 built on 2	0200618, supports	Shielded VM	features 📀					
Boot disk type 📀			Size (GB) 🕐					
Standard persis	stent disk	•	20					

3. On Security tab add the public SSH key if you do not have project SSH keys

SSH Keys Block project-wide SSH keys When checked, project-wide SSH keys cannot access this instance Learn more				
You have 0 SSH keys				
	Enter public SSH key	×		
	+ Add item	]		

- 4. On Network tab choose external and internal IP addresses:
- 5. if the server supposed to be Origin in CDN, it is recommended to reserve a static internal IP address;
- 6. if there should be external entry points to the server (for example, to use for publishing/playing streams), it is recommended to reserve a static external IP address to

bind domain name to

Network interface		^
Network		
Subnetwork default		
Internal IP 10.156.0.3		
Internal IP type		
Ephemeral		•
Alias ID ranges		
Subnet ranges	Alias IP range 💿	
Primary (10.156.0.0/20)	Example: 10.0.1.0/24 or /32	×
	IP rango	]
	ii laige	J
A Hide alias IP ranges		
External IP 📀		
Ephemeral		-
Network Service Tier Premium (Current project-levent) Standard (europe-west3)	el tier, change) 📀	
Off		
Public DNS PTR Record ② Enable		
PTR domain name		
Done Cancel		

7. Click Create

Turn on all setting	s for the most	secure co	onfiguration.		
<ul> <li>Turn on Secu</li> <li>✓ Turn on vTPI</li> <li>✓ Turn on Integ</li> </ul>	ire Boot 💿 M 💿 grity Monitori	ng 🕐			
SSH Keys These keys allow	access only to	this insta	nce, unlike project	t-wide SSH keys Learn m	ore
Block project When checker	t-wide SSH ke d, project-wide	e <b>ys</b> SSH keys	cannot access th	is instance Learn more	
gcp	gT w) 40 u0 v1 k/ aE	TaJ8gvi6x (e4kRKIkM GcWQ9gCPv G0+2kaChL ICrIDvRXF A/bAgy2tF B gcp	9RQB6niVuTN80c 14QnxUTsNNsC6yc voIIHZqE79zB0xb kxHehJ+Xotz/NW D0nuSuj8EpBU3J 5Ajc50ZCPIVcOu	K3H1A4xINxQ29GGxWJ /d57Ur773518Tevf3v Rhgjj4ED1rRbC11ug0 0Az0cwkw1YSZGDditT jj54zChTI2k4dUDcPY 74R1/7RZ1YqgIJ1g+L	×
		+ Ad	d item		
☆ Less					
	create instan	ce templa	ates free of char	ge. Your free trial credi	t
You can always won't be used.					
You can always won't be used. Create Can	cel				
You can always won't be used. Create Can Equivalent REST	cel or command	lline			

Name ∧         Zone         Recommendation         In use by         Internal IP         External IP         Connect           ✓ test-origin-1         europe-west3-c         10.156.0.3 (nic0)         35.234.93.218         SSH →         :	Ē	Filter VM instance	s					0	Co	lumn	IS ▼
□ 🔮 test-origin-1 europe-west3-c 10.156.0.3 (nic0) 35.234.93.218 SSH -		Name A	Zone	Recommendation	In use by	Internal IP	External IP	Cor	nec	t	
		🔮 test-origin-1	europe-west3-c			10.156.0.3 ( <u>nic0</u> )	35.234.93.218	SS	н	•	:

### Firewall rules setup

Firewall rules affect all the instances in the project, so they should be set up once

H	VPC network	← Create a firewall rule	
8	VPC networks	Firewall rules control incoming or outgoing traffic to an instance. By default, incoming traffic from outside your network is blocked Learn more	g
Ľ	External IP addresses	Name *	
88	Firewall	wcs-ports	0
*	Routes	Lowercase letters, numbers, hyphens allowed	
Ŷ	VPC network peering	WCS specific ports rule	
×	Shared VPC	Logs	
$\otimes$	Serverless VPC access	Turning on firewall logs can generate a large number of logs which can increase costs in Stackdriver. Learn more	
ılijı	Packet mirroring	On Off	

2. Allow incoming (ingress in terms of GCP) traffic from any node

Network *	
default	• 0
Priority *	
1000	?
Priority can be 0 - 65535 Check priority of other firewall rules	
Direction of traffic 🔞	
Ingress	
C Egress	
Action on match 🔞	
Allow	
Deny	
Targets	
All instances in the network	- 0
Source filter	
IP ranges	- 0
Source IP ranges *	
0.0.0.0/0 😵 for example, 0.0.0.0/0, 192.168.2.0/24	0
Second source filter	

3. Specify WCS ports and click Create

Protocols and port	ts 🚱					
Allow all						
Specified prote	ocols and ports					
🗸 tcp :	554, 1935, 8080-8084, 8443-8445, 8888, 9091, 30000-33000					
🗸 udp :	1935, 30000-33000					
Other prot	Other protocols					
protocols, co	protocols, comma separated, e.g. ah, sctp					
V DISABLE RULE						
CREATE CANCEL						
Equivalent <u>REST</u> or <u>command line</u>						

#### WCS installation and configuration

1. Install JDK. It is recommended to use at least JDK 12 or 14 if high load is planning

```
#!/bin/bash
sudo rm -rf jdk*
curl -s
https://download.java.net/java/GA/jdk12.0.2/e482c34c86bd4bf8b56c0b35558996b9
12.0.2_linux-x64_bin.tar.gz | tar -zx
[ ! -d jdk-12.0.2/bin ] && exit 1
sudo mkdir -p /usr/java
[ -d /usr/java/jdk-12.0.2 ] && sudo rm -rf /usr/java/jdk-12.0.2
sudo mv -f jdk-12.0.2 /usr/java
[ ! -d /usr/java/jdk-12.0.2/bin ] && exit 1
sudo rm -f /usr/java/default
sudo ln -sf /usr/java/jdk-12.0.2 /usr/java/default
sudo update-alternatives --install "/usr/bin/java" "java" "/usr/java/jdk-
12.0.2/bin/java" 1
sudo update-alternatives --install "/usr/bin/jstack" "jstack"
"/usr/java/jdk-12.0.2/bin/jstack" 1
sudo update-alternatives --install "/usr/bin/jcmd" "jcmd" "/usr/java/jdk-
12.0.2/bin/jcmd" 1
sudo update-alternatives --install "/usr/bin/jmap" "jmap" "/usr/java/jdk-
12.0.2/bin/jmap" 1
sudo update-alternatives --set "java" "/usr/java/jdk-12.0.2/bin/java"
sudo update-alternatives --set "jstack" "/usr/java/jdk-12.0.2/bin/jstack"
sudo update-alternatives --set "jcmd" "/usr/java/jdk-12.0.2/bin/jcmd"
sudo update-alternatives --set "jmap" "/usr/java/jdk-12.0.2/bin/jmap"
```

2. Install accessory tools and libraries

```
sudo yum install -y tcpdump mc iperf3 fontconfig
```

3. Stop firewalld (it ti not necessary to block any ports on VM level because firewall rules were set up on project level)



4. Disable SELinux

sudo setenforce 0

5. Install WCS

```
curl -OL
https://flashphoner.com/downloads/builds/WCS/5.2/FlashphonerWebCallServer-
5.2.xxx.tar.gz
tar -xzf FlashphonerWebCallServer-5.2.xxx.tar.gz
cd FlashphonerWebCallServer-5.2.xxx
sudo ./install.sh
```

Where xxx is WCS actual build number

6. Activate your license



7. Configure WCS (below the example of Origin server settings to publish WebRTC and RTMP streams)

```
flashphoner.properties [----] 29 L:[ 1+23 24/ 40] *(680 / 981b) 0010 0x00A
            =34.107.12.11
=10.156.0.3
ip
ip_local
nedia_port_from
                       =32000
edia_port_to
codecs=opus,alaw,ulaw,g729,speex16,g722,mpeg4-generic,telephone-event,h264,vp8,flv,mpvcodecs_exclude_sip=mpeg4-generic,flv,mpvcodecs_exclude_streaming=flv,telephone-eventcodecs_exclude_sip_rtmp=opus,g729,g722,mpeg4-generic,vp8,mpv
                          =8080
=8443
vs.port
wss.port
cdn_enabled=true
cdn_ip=10.156.0.3
dn_role=origin
cdn_nodes_resolve_ip=false
# Request keyframes from WebRTC publishers every 5 seconds
periodic_fir_request=true
ceep_alive.enabled=websocket,rtmfp
client_mode=false
rtc_ice_add_local_component=true
```

Do not change IP addresses in ip, ip\_local u cdn\_ip settings, they will be configured automatically on WCS startup.

#### WCS starting and testing

1. Start WCS

sudo systemctl start webcallserver

2. Enter to WCS web interface, open Two Way Streaming example, publish and play test stream



## CDN deployment

- 1. Create and configure Origin server as described above
- 2. Create and configure Edge server (below the example of Edge server settingt to play WebRTC streams)

```
Flashphoner.properties [-M--] 0 L:[ 1+36 37/ 37] *(874 / 874b) <EOF>
       fig flashphon
                            =34.107.12.11
=10.156.0.5
ip
ip_local
#webrtc ports range
media_port_from
                          =31001
media_port_to
codecs=opus,alaw,ulaw,g729,speex16,g722,mpeg4-generic,telephone-event,h264,vp8,flv,mpvcodecs_exclude_sip=mpeg4-generic,flv,mpvcodecs_exclude_streaming=flv,telephone-eventcodecs_exclude_sip_rtmp=opus,g729,g722,mpeg4-generic,vp8,mpv
ws.port
wss.port
cdn_enabled=true
cdn_ip=10.156.0.5
cdn_role=edge
cdn_point_of_entry=10.156.0.3
cdn_nodes_resolve_ip=false
client_mode=false
 rtc_ice_add_local_component=true
http_enable_root_redirect=false
```

Do not change IP addresses in ip, ip\_local u cdn\_ip settings, they will be configured automatically on WCS startup. Set the cdn\_point\_of\_entry parameter to Origin server static internal IP address

### CDN testing

- 1. Start WCS on Origin and Edge VM instances.
- 2. Go to Origin web interface and publish test stream in Two Way Streaming example



3. Go to Edge web interface and play test stream in Player example