

Grandstream Networks, Inc.

SoftwareUCM Media Cluster Guide

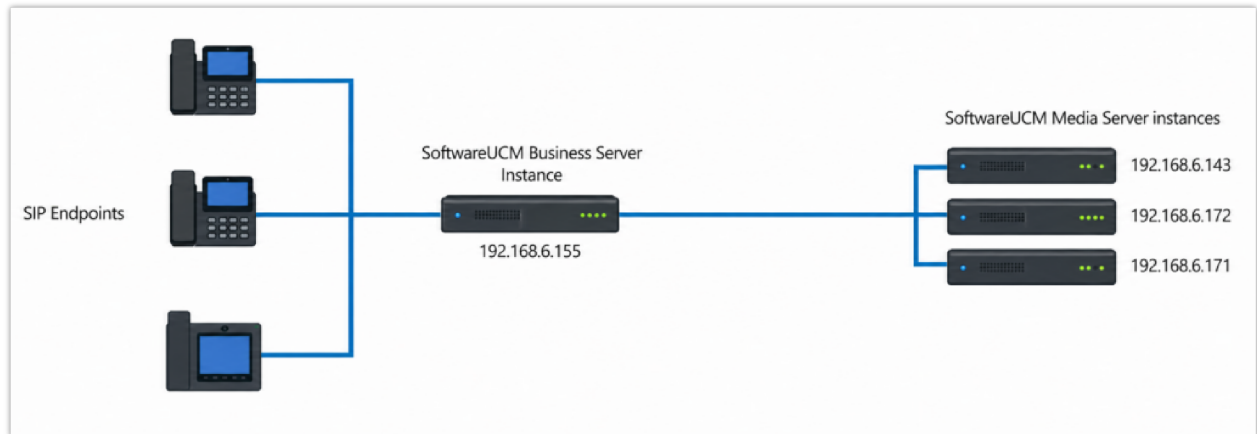


SoftwareUCM Media Cluster Guide

INTRODUCTION

The 1+N media cluster feature allows clustering multiple SoftwareUCM instances to expand the number of concurrent calls and meeting participants, in addition to audio/video calls recordings storage.

The deployment architecture of this feature consists of one main business server that handles signaling, and at least one other server handling the media traffic. Please see the example for the SoftwareUCM below.



SoftwareUCM Cluster Diagram

Important

- Each cluster can consist of 5 media servers and one unique business server; each server is considered a SoftwareUCM instance. The business server will require a full SoftwareUCM license to run, while the other SoftwareUCM instances used for media storage will need to be set up as media servers and will not require a separate license.

Notes

- All the SoftwareUCM instances used for the media cluster feature must be under the same LAN, and their IP addresses must be in the same network segment.
- The Business Server and Media Servers must use the same firmware version.
- Please ensure that the IP addresses of the business server and media server in the cluster environment do not change. Otherwise, the connection between the cluster devices will be affected. The cluster will need to be rebuilt if a change in IP address occurs.

CONFIGURATION STEPS

The cluster configuration consists of two main parts: the business server configuration and the media server(s) configuration.

Business Server

Setting a Static IP address

To ensure the connection to the business server isn't lost, the user must configure a static IP on the business server.

- **For the SoftwareUCM instance that you want to set as the business server:**

A static IP can be configured directly in the web UI or reserved on the DHCP server.

1. Access the web UI, navigate to **System Settings** → **Network Settings**, and then set a static IP on the network interface that is connected to the network where the media servers are hosted.

The screenshot shows a web interface for configuring network settings. At the top, there are three tabs: 'IPv4 Address' (selected), 'IPv6 Address', and 'Network Port Traffic Control'. Below the tabs, there is a 'Preferred DNS Server' field. A section titled 'LAN 1' contains several configuration fields: 'IP Method' (set to 'Static'), '* IP Address' (192.168.5.161), '* Subnet Mask' (255.255.255.0), '* Gateway IP' (192.168.5.1), '* DNS Server 1' (192.168.5.1), 'DNS Server 2' (empty), 'Layer 2 QoS 802.1Q/VLAN Tag' (0), and 'Layer 2 QoS 802.1p Priority Value' (0).

Business Server IP Configuration

2. Click "Save" to save the configuration.

Configuring the Cluster Settings

To configure the SoftwareUCM instance as the Business Server, please follow the steps below:

1. Navigate to **System Settings** → **Cluster**, then tick the option **Enable Media Cluster**.
2. Choose "Business Server" as the **Device Role**.
3. Choose the **Multicast Network Port**. This depends on the networking settings of the device (Route mode or Dual mode).
4. Enter a **Multicast IP address** that will be used to send multicast traffic. Please ensure the IP address is within the allowed multicast range (224.0.1.0 – 238.255.255.255).
5. Enter a **port range start value** and **end value** in the corresponding fields. The range must be between **1024** and **65535**.
6. Enter the **Business Server Listening Port number**. This must also be within **1024 – 65535**.
7. Enter the **Media Server addresses**. These can be added in advance and later assigned to the media server(s).
8. Once all settings are entered, click "**Save**" to save the configuration.

Cluster

Networking Requirements: All SoftwareUCMs within the cluster must be connected to the same switch, and their IP addresses must be in the same network segment.
Version Requirements: The firmware versions of the business server and media server must be identical for the same model.
IP Stability: Use a static IP address. If the IP changes, you must rebuild the cluster.

Enable Media Cluster  ☒

* Device Role  ☒ Business Server ☐ Media Server

* Multicast IP Address 

* Multicast Address Port Start Value

* Multicast Address Port End Value

* Business Server Listening Port 

Sync Media NAT Traversal Settings  ☒

Media Server

 For alerts, go to [Alert Events List](#) to enable the "1+N Media Cluster Connection Status" alert.

* Media Server IP   

Add 

Business Server Configuration

Parameter	Description
Enable Media Cluster	Enable Media Cluster feature.
Device Role	Configure the device role. • Business Server: Choosing this role will make the SoftwareUCM instance as the main server for operations. • Media Server: Choosing this role will make the SoftwareUCM instance as a media server only. All the PBX related features will be disabled.
Multicast IP Address	The allowed multicast IP address range is 224.0.1.0 – 238.255.255.255
Multicast Address Port Start Value	Enter the multicast address port start value. The port number value can be within the range 1024 – 65535. Note: The multicast address port start value must be lower or equal to the multicast address port end value.
Multicast Address Port End Value	Enter the multicast address port end value. The port number value can be within the range 1024 – 65535. Note: The multicast address port end value must be greater or equal to the multicast address port start value.
Business Server Listening Port	The port on which the business server listens and receives information reported by the media server. The value of the listening port value can be within 1024 – 65535.
Sync Media NAT Traversal Settings	If enabled, all media servers in the cluster will use the same Media NAT Traversal settings as the business server. If disabled, each server will need to be configured individually.
Media Server	
Media Server Settings	Enter the IP address of the media server. This is the IP address of the SoftwareUCM instance that you want to set as media server. The statuses of the media servers are indicated using three colors: ○ Green: The server is available.

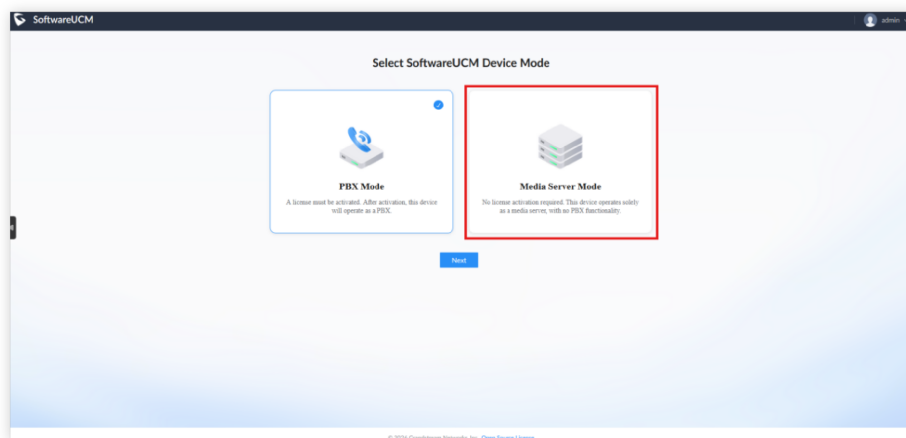
	○ Yellow: The server is in use. ○ Gray: The server is offline.
Media Server Switch Threshold	
Memory Usage Threshold (%)	When the memory usage of this media server is exceeded, media services will be assumed by another media server in the cluster with the lowest usage at the time.
CPU Usage Call Control Threshold (%)	When the CPU usage of this media server is exceeded, media services will be assumed by another media server in the cluster with the lowest usage at the time.
Media Server Usage Threshold	
Memory Usage Threshold (%)	When this server's memory usage exceeds the specified threshold, service from this server will be temporarily paused.
CPU Usage Call Control Threshold (%)	When this server's CPU usage exceeds the specified threshold, service from this server will be temporarily paused.
Disk Available Space (MB)	When the percentage of available space in the device's disk data partition falls below the set value, this server will not be used until the amount of available space is above the threshold again.

Media Server

Enabling Media Server Mode

Before using the SoftwareUCM instance as a media server, the following steps should be followed:

- Install the **SoftwareUCM ISO** on either a virtual machine (VM) or bare-metal hardware, depending on your deployment preference.
- Once installation is complete, access the **Web UI** using the local IP address assigned to the instance.
- During the initial setup wizard, select the option to configure the instance as a **Media Server**.
- Follow the setup wizard to complete the remaining configuration parameters (network, credentials, etc.).
- After the instance is configured in **Media Server Mode**, all VoIP and telephony (call control) features will be disabled.
- The instance will function strictly as a **media processing node**, handling tasks such as media streams and storage, rather than acting as a Business Server.



Enabling Media Server Mode

Setting a Static IP address

Similar to the business server, we also need to set the static IP address for the media server to avoid losing the connection to it.

A static IP can be configured directly in the web UI or reserved on the DHCP server.

1. Access the SoftwareUCM’s web UI, navigate to **System Settings** → **Network Settings**, and then set a static IP on the network interface that is connected to the network where the business server is hosted.

IPv4 AddressIPv6 AddressNetwork Port Traffic Control

Preferred DNS Server

LAN 1

IP Method

Static

* IP Address

192.168.5.171

* Subnet Mask

255.255.255.0

* Gateway IP

192.168.5.1

* DNS Server 1

192.168.5.1

DNS Server 2

Layer 2 QoS 802.1Q/VLAN Tag

0

Layer 2 QoS 802.1p Priority Value

0

Media Server IP Configuration

2. Click “Save” to save the configuration.

Configuring the Cluster Settings

To configure the SoftwareUCM device as a media server, please follow the steps below:

1. Please navigate to **System Settings** → **Cluster**.
2. Tick the option “Enable Media Cluster”.
3. Select “Media Server” as the **Device Role**.
4. Enter the IP address of the business server and the listening port configured on the Business server. in the case where you are configuring the business server for HA setup, then the IP address will be the cluster IP address.

Enable Media Cluster

☒

* Device Role

☐ Business Server☒ Media Server

* Business Server IP and Port

192.168.6.155

:

9528

Learn more about Media Cluster with the [1+N Media Cluster Guide](#)

Cancel

Save

Media Server Configuration

Enable Media Cluster	Enable Media Cluster feature.
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Device Role	Configure the device role.
Business Server IP and Port	Enter the IP address of the business server with the listening port. If the business server is using HA Local Hot Standby, the Hot Standby Cluster IP address must be used. If the business server is using HA Remote Disaster Recovery, the primary SoftwareUCM and secondary SoftwareUCM must have their own respective cluster environments.

5. Then click “Save” to save the configuration.

CONSIDERATIONS

Some of the settings that are important for the normal operation of the cluster are synchronized automatically; meeting settings and RTP ToS settings are synchronized automatically. Meanwhile, the NAT traversal settings such as TURN server address, STUN server address, etc., are only synchronized if the “Sync Media NAT Traversal Settings” option is enabled, please see [\[Business Server\]](#) section.

Meeting Settings

For media servers, all the configuration options on this page are greyed out to display the information configured on the business server.

Media Server Multimedia Meeting Settings

SIP Settings

Please ensure that the following ToS SIP settings are identical across all the devices that are involved in the cluster. To access the configuration page, please navigate to **PBX Settings → SIP Settings → ToS**

RTP Settings

If the Business Server is behind a NAT router and does not have a RemoteConnect plan, port forwarding must be configured on the router. Each media server should use a unique port range for RTP and BFCP. For example:

- SoftwareUCM 1: 10000–20000
- SoftwareUCM 2: 20001–30000
- SoftwareUCM 3: 30001–40000

The same logic applies to BFCP. Port forwarding rules should map each range to the corresponding server's IP address. If a TURN server is used, it can serve all media servers.

To access the configuration page of RTP Settings, please navigate to **PBX Settings → RTP Settings**

The following media NAT Traversal parameters will only be visible on the business server:

RTP Settings

[RTP Settings](#) [Payload Type Settings](#)

Strict RTP ☐

RTP Checksums ☐

ICE Support ☒

STUN Server

* BFCP UDP Start

* BFCP UDP End

* BFCP TCP Start

* BFCP TCP End

TURN Server

TURN Server Name

TURN Server Password

Connection Protocol

Number of ICE Candidates

Business Server RTP Settings

The remaining settings will be greyed out on the media server's side. Only the configuration on the business server will be taken into consideration.

SoftwareUCM

System Status

Basic Call Features

PBX Settings

SIP Settings

RTP Settings

Storage Device Manag...

System Settings

Maintenance

RTP Settings

RTP Settings

The associated business server has enabled Sync Media NAT Traversal Settings. This device will use the business server's media NAT traversal settings.

RTP Start

10000

Range 1024 - 65535

RTP End

20000

Range 1024 - 65535

Strict RTP

☐

RTP Checksums

☐

NAT Traversal Service

If the GDMS Media NAT Traversal Service feature is enabled, the STUN/TURN configurations below will not take effect.

STUN Server

TURN Server

TURN Server Name

0 - 128 characters, Characters " " and spaces are not allowed.

TURN Server Password

8 - 64 characters, Supports numbers, letters and special characters -_!#\$%&@

Connection Protocol

UDP

Number of ICE Candidates

Media Server RTP Settings

CLUSTER CAPABILITIES

The following table mentions the number of calls each business server is capable of processing and the additional calls that each media server will process once the SoftwareUCM instances are configured: both the business server and media server(s).

Business Server	
Max Concurrent Calls	Follows the maximum concurrency specification of the business server license. (Note: The update supports media cluster mode with max calls increased to 3000+).
Max Meeting Participants	The maximum number of conference participants is determined by the maxcalls value of the business server: • If maxcalls ≤ 300, then: Maximum conference participants = maxcalls • If maxcalls > 300, then: Maximum conference participants = 300
Media Server	
Media Server Additional Concurrent Calls	0 (SoftwareUCM directly follows the maximum concurrency specification of the business server license. The media server device should be considered merely as an add-on to enhance capabilities).

Media Server Additional Meeting Participants	0 (The calculation method for the number of meeting members strictly follows the maximum concurrency specification of the business server license).
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The calculation logic of **maximum concurrent calls (maxcalls)** and **maximum meeting participants** works as follows:

- **Max Concurrent Calls (maxcalls):** In a Software UCM deployment, *maxcalls* is strictly determined by the **licensed capacity of the Business Server**. This value represents the total number of concurrent calls allowed by the system license and remains **independent of any Media Server contributions**. Media servers provide media processing resources but do not extend or modify the licensed maxcalls limit of the Business Server.
- **Maximum Meeting Participants:** The maximum number of meeting participants follows the maximum concurrency specification defined by **the Business Server license**.

Additionally, the Software UCM introduces a dedicated **Media Server Mode**, which changes how Media Servers are deployed and licensed:

- **Media Server Licensing Model:** Software UCM Media Servers operating in **Media Server Mode do not require any license**. This allows flexible and cost-efficient scaling of media processing capacity. However, in this mode, the node is strictly limited to media handling functions and **cannot operate as a Business Server or provide call control features**.

Let's consider the following example: One **Software UCM instance** is deployed as the **Business Server**, and two additional **Software UCM instances** are deployed in **Media Server Mode**:

Max Concurrent Calls (maxcalls)

The **Max Concurrent Calls (maxcalls)** value is determined exclusively by the **Business Server license**.

For example, if the Business Server license allows **300 concurrent calls**, then:

→ **Maxcalls = 300 calls**

(Media Servers do not increase this limit.)

Meeting Participants

The maximum number of conference participants is determined by the **maxcalls** value of the Business Server:

- If **maxcalls ≤ 300**, then:→ **Maximum conference participants = maxcalls**
- If **maxcalls > 300**, then:→ **Maximum conference participants = 300**

Examples:

- Business Server with **200 maxcalls**:→ Maximum conference participants = **200**
- Business Server with **500 maxcalls**:→ Maximum conference participants = **300**

Note

The conference participant limit is not specified separately in the license certificate and is derived from the Business Server's maxcalls value. CPU threshold settings do not affect the maximum number of conference participants.

Reminders

- The **Business Server license defines the maxcalls and max meeting participants ceiling**, regardless of how many Media Servers are added.

- Media Servers in Media Server Mode require no license, but they only contribute to media processing and meeting capacity, not call control.

For more information on the pricing for the suitable license for your use case, please visit the link:

<https://cloud.grandstream.com/softucm/plans>, license size can be customized to meet your needs in terms of number of Users/ Extensions, as well as the number of concurrent calls.

SoftwareUCM License Fees
A powerful and scalable solution for software-based unified communications and collaboration

Pricing Calculator

License Size

Users/Extensions
Up to 5000 Users/Extensions

Concurrent Calls
Up to 1000 Concurrent Calls

Price Breakdown

Base Package	\$325
Upgrade-500 Package * 2	\$1900
Max Users/Extensions 1100 , Max Concurrent Calls 224	
Total Fees Annually \$2225	

[SoftwareUCM Datasheet](#) [Find a Distributor to Purchase](#)

Main Package

Base Package

- Up to 100 Users/Extensions
- Up to 32 Concurrent Calls
- All Features of UCM6300 Series IP PBX

\$325/Year [Free Trial 30 Days >](#)

Add-On Options for Purchase

Upgrade-100 Package
Extra 100 Users/Extensions, 24 Concurrent Calls
\$250/Year

Upgrade-500 Package
Extra 500 Users/Extensions, 96 Concurrent Calls
\$950/Year

SoftwareUCM License Fee

HIGH AVAILABILITY WITH THE CLUSTER

Local Hot-standby:

If the business server is configured with HA Local Hot-standby, then the media server must configure the **Business Server IP** field with the HA cluster IP address. In case of HA failover, the secondary unit will also be able to take advantage of the existing media cluster.

Note

To configure Local Hot-standby for the SoftwareUCM instances, please refer to the following guide:

[SoftwareUCM HA Local Standby User Guide](#)

Remote Disaster Recovery:

Cluster configuration is not synced in Remote Disaster Recovery environments. Users can choose to expand the capacity of only one of the UCMs or both units. In the case of the latter, the primary and secondary units must configure their own separate cluster environments.

Note

To configure Remote Disaster Recovery for the SoftwareUCM instances, please refer to the following guide:

[SoftwareUCM – High Availability User Guide: Remote Disaster Recovery – Documentation Center](#)

SUPPORTED DEVICES

Model	Firmware Version
SoftwareUCM	1.0.33.7+



Need Support?

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[CONTACT SUPPORT](#)