

Split ABR Encoding

Sept 2018

When encoding ABR Profiles, there can be times when the number and complexity of profiles exceeds the capabilities of a single server, for example:

```
3840x2160p50@20Mbps
1920x1080p50@6Mbps
1920x1080p50@3Mbps
1280x720p50@2Mbps
1280x720p50@1.5Mbps
720x576p50@1Mbps
544x576p50@800Kbs
384x576P50@300Kbs
```

This profile list could not be produced by a single server (at the time of writing) and so two or three servers might be required, but as this is ABR, and all the profiles need to be I-Frame aligned, we need a way to achieve this.

To overcome this we can use Split ABR encoding, where we can use several servers to encode different parts of the profile list, but still aligned in time. For this to work we need the following:

Servers must be time synchronised

A multicast is used for synchronisation, if using the MGMT port the MGMT switch must support multicasts.

Interfaces on all servers must be identical in name and operation (so if eth1 is the IP input, all servers must use the name eth1 for the interface, and it must be the input interface)

This guide assumes you know how to create a standard ABR output service.

Create an ABR service as normal, but don't assign any servers to the configuration.

The screenshot shows the MediaKind Controller web interface. On the left, a sidebar contains navigation links: Home, Services (highlighted with a red box), Servers, Alarms, Templates, Failover, and Settings. The main content area is titled 'MediaKind Controller' and 'Home / Services'. It features buttons for 'Add service' and 'Import service...'. Below these is a search bar and a table of services. The table has columns: Name, Processing Type, Templates, Stats, Alarms, Resources, and Status. A service named 'Sync_ABR' is listed with 'Live Encoding' as its processing type. In the 'Resources' column, there is a 'Mandatory' resource with a dropdown menu highlighted by a red box, showing 'Choose a server to run...'. The status of this service is 'stopped'.

Once created, edit the configuration, and on the General Tab, add a Variant for each server you will use (so if you require 3 servers to cover all your profiles, add three variants)

MediaKind

MediaKind Controller

Home / Services / Sync_ABR / Edit

000admin

Home

Services

Servers

Alarms

Templates

FallOver

Settings

General

Input

Media processing

Encoding

Output

Advanced parameters

General

Name *

Sync_ABR

Template

Hardware acceleration (Intel QSV)

Synchronization

Activate

Mode *

All

Network interface *

eth0

Address *

239.0.201.10

Port *

1234

IGMPv3 source filtering

Server variant configuration

Redundancy

Activate

Subset

Name	Server tag selection	Actions
UHD		<div></div>
FHD		<div></div>
<div>+ Add</div>		

Exit

Save and continue

Save and exit

While on the General Tab, under Synchronisation, click the Activate check box, and fill out the multicast details:

Mode: All
Network Interface: (up to you, I use eth0)
Address: Use a unique Multicast
Port: Multicast Port

MediaKind

MediaKind Controller

Home / Services / Sync_ABR / Edit

000admin

Home

Services

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FHD		<div></div>
<div>+ Add</div>		

Exit

Save and continue

Save and exit

Navigate to the OUTPUTS page, where you created the streams for each multicast output

Output streams

Output stream	Subset	Streams	Actions
239.0.201.1:5001		<div>121 HEVC Main Extreme 3840x2160</div> <div>221 Dolby Digital Stereo 96Kbps 48Khz</div>	<div></div> <div></div>
239.0.201.1:5002		<div>121 HEVC Main Extreme 1920x1080</div> <div>221 Dolby Digital Stereo 96Kbps 48Khz</div>	<div></div> <div></div>
239.0.201.1:5003		<div>121 HEVC Main Extreme 1280x720</div> <div>221 Dolby Digital Stereo 96Kbps 48Khz</div>	<div></div> <div></div>
<div>+ Add</div>			

Edit the first output, and add the Variant name for this output. Depending on how you will group your outputs, you will add a Variant for that server, so if your first three outputs will be encoded by the first server, you will add the Variant name for that server.

Output stream

IP Address *

239.0.201.1

Port *

5001

FEC

Subset

UHD

FHD

Stream	Description	Profile	Codec
<input checked="" type="checkbox"/> Video_01_enc_1	HEVC Main Extreme 3840x2160	121	dec
<input type="checkbox"/> Video_01_enc_2	HEVC Main Extreme 1920x1080	122	dec
<input type="checkbox"/> Video_01_enc_3	HEVC Main Extreme 1280x720	122	dec
<input checked="" type="checkbox"/> Audio_1_encoded_1	Dolby Digital Stereo 96Kbps 48Khz	221	dec

Cancel

Ok

Lets say I create three Variant names, because I have three servers, and I call them UHD, HD, SubHD. Then I would use the following table to split my profiles across the three servers.

3840x2160p50@20Mbs	UHD
1920x1080p50@6Mbs	HD
1920x1080p50@3Mbs	HD
1280x720p50@2Mbs	HD
1280x720p50@1.5Mbs	HD
720x576p50@1Mbs	SubHD
544x576p50@800Kbs	SubHD
384x576P50@300Kbs	SubHD

Note, this does not assign the server, you do that somewhere else.

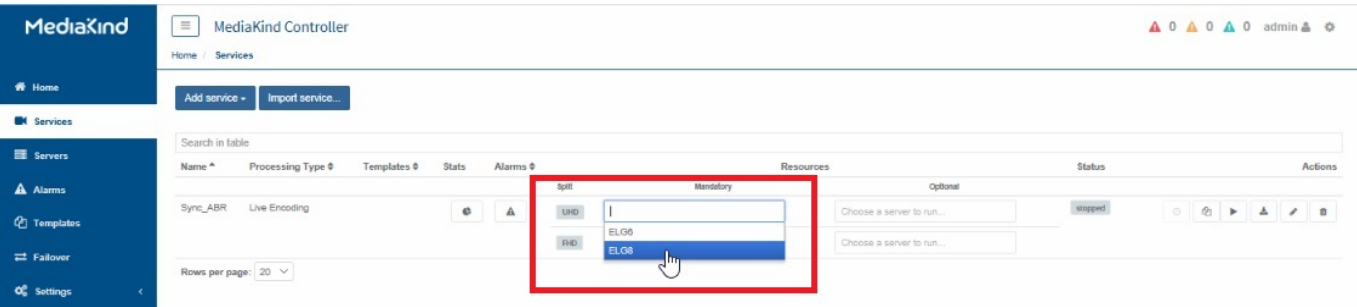
Once all of the profiles have been assigned a Variant, you will see that Variants are listed in all of the outputs.

Output streams

Output stream	Subset	Streams	Actions
239.0.201.1:5001	UHD	<div>121 HEVC Main Extreme 3840x2160</div> <div>221 Dolby Digital Stereo 96Kbps 48Khz</div>	<div></div> <div></div>
239.0.201.1:5002	FHD	<div>121 HEVC Main Extreme 1920x1080</div> <div>221 Dolby Digital Stereo 96Kbps 48Khz</div>	<div></div> <div></div>
239.0.201.1:5003	FHD	<div>121 HEVC Main Extreme 1280x720</div> <div>221 Dolby Digital Stereo 96Kbps 48Khz</div>	<div></div> <div></div>
<div>+ Add</div>			

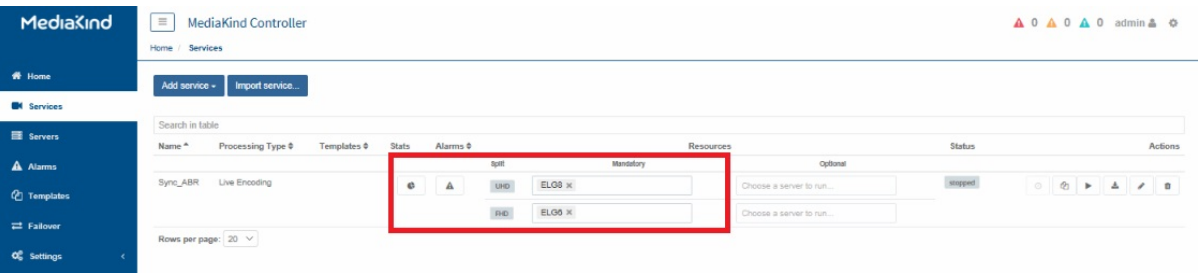
Navigate back to the Service level, where you normally assign a server, and from here each Server can be assigned to each Variant. Remember, a Variant may cover several

profiles, so your Variant list will only be as long as the number of servers that are being used.



In the following example, I have two Servers, a G6 and a G8. The G8 will do a single UHD Profile, and the G6 will do my HD Profiles. Two Servers means I only need two Variants.

All I have to do is map the right server to the right Variant.



Alarm

If you see this alarm, or similar

Timestamps synchronization messages are not being received or are not synchronize for
service=2f73015aa94040ceb39b3cbffa37d2e3;;sdt=SplitABRTTest

If everything is configured okay, and you are using SDI input, SDI sync is not supported before around v10.3, so check your Encoding Live version.

From:

<http://cameraangle.co.uk/> - WalkerWiki - wiki.alanwalker.uk

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http://cameraangle.co.uk/doku.php?id=split_abr_encoding&rev=1556260692

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