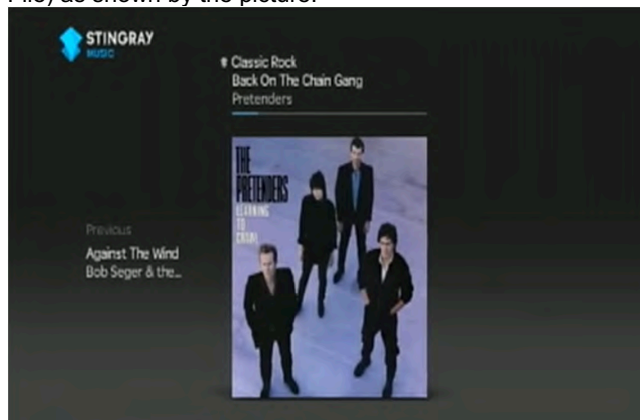


[e] for each one of the media files, creating a custom hypertext transfer markup language (HTML) user interface that includes video;

The user interface is made in reference to:

- MC-EGLA-000033 shows the “Stingray Music Method transmits a data packet (e.g. an HTML or XML File) as shown by the picture.



- As shown at EGLA-TRELLO-000569, the assets used are

Apr 20, 2018 <http://covers.galaxie.ca/song/G:27...> covers.galax... 200 107.20.193.169

Apr 18, 2018 <http://covers.galaxie.ca/song/G:4...> covers.galax... 200 107.20.193.169

Apr 18, 2018 <http://covers.galaxie.ca/song/G:4...> covers.galax... 200 107.20.193.169

Apr 18, 2018 <http://covers.galaxie.ca/song/G:4...> covers.galax... 200 107.20.193.169

Mar 28, 2018 <http://www.galaxie.ca/galaxie/pla...> www.galaxie... 200 107.20.197.28

- One of the covers is tracked by the Valut as shown at EGLA-TRELLO-000571 for the link at: <http://covers.galaxie.ca/song/G:435275/001/showCoverORgener...> That requires a browser or an HTML site to handle the screen. (See also EGLA-TRELLO-000572 to EGLA-TRELLO-000583).
- The servers used to retrieve Playlists, songs, mediafile.galaxie.ca for example use standard HTTP responses for instance at EGLA-TRELLO-000582 show HTTP Responses as 200, 403, and other that are standard HTTP Responses that are understood by a web-browser, including Cookies, and other standard HTTP headers that only a compatible web-browser understands. (See RFC7231, RFC2616, RFC1945, and many others as depicted by IETF.org).
- See also EGLA-TRELLO-0000625 as shown the log file says: “Received successful response: 200, AWS Request ID: 4dd....” This is an HTTP Response understood by a web browser.
- The Header shows when retrieving from AmazonS3 as the header at EGLA-TRELLO-000573. The headers used are shown:

HTTP/1.1 200 OK Content Type: image/jpeg Content Length: 8153 Connection: keep alive Date: Mon 19 Apr 2021 02:07:34 GMT Last

	Modified: Mon 17 Jul 2017 21:23:21 GMT ETag: 85f04eacfc807e81a94707fef26f9e24 Accept Ranges: bytes Server: AmazonS3 X Cache: Hit from cloudfront Via: 1.1 030fe0607711293dda988e571617a9f3.cloudfront.net CloudFront X Amz Cf Pop: HIO50 C1 X Amz Cf Id: pq 854CgXkG3wDKQ6O0yZKIDLgVh4esO3CUd2hh4pE9RQuLT1swaA== The album covers are checked as shown at EGLA-TRELLO-000566 were the log says <i>"Entel2 No album image 36 & 48 musicMux2 Fri 2018-08-31 13:31:31 EDT Log files to check "</i>
[f] encoding each of the media files and encapsulating them together using an MPEG transport stream format;	- The media files are encoded into an MPEG multimedia format, as shown at EGLA-TRELLO-000645, it shows "both mpeg2 and H264 servers" - MPEG2VIDEO is depicted at EGLA-TRELLO-000648, where MPEG2Video is used as part of an MPEG transport stream.
[g] storing each one of the multimedia assets at the caching unit;	As shown at EGLA-TRELLO-000515 the GalaxieStillPicGenerator saves the files generated at /data/video_realtime/* directory, for instance : <i>"GalaxieStillPicGenerator] - Could not generate fallback for /data/video_realtime//0161735.tar, deleting output file"</i> As shown at EGLA-TRELLO-000483, the directory video_realtime is created to store the generated files, as part of the caching directory /data/* The files are also loaded from the /data/videdo_realtime/ as the video folder at EGLA-TRELLO-000484 shows how the error in reference to "/data/video_realtime/205/2059052.tar" with type TTA or "Type Tittle Artist": <i>2016-01-28 16:23:04: [INFO] [MC0083] Loading from video folder "/data/video_realtime/205/2059052.tar" with type TTA 2016-01-28 16:23:04: [INFO] [MC0083] 170 seconds of videos needed, adding 17 videos of 10 seconds. 2016-01-28 16:23:06: [WARN] EncoderProxy ran out of data! 2016-01-28 16:23:06: [WARN] EncoderProxy ran out of data"</i> The TTA Files are shown at EGLA-TRELLO-0000002 and consist of the entry : <i><Entry Event="15" Type="Not Played" Category="209" Id="1941" Title="All My Friends" Artist="Snakehips fe (emphasis added)</i>

[h] receiving a request at the caching unit for one of the multimedia assets from a broadcasting unit; and	Upon retrieving a playlist at EGLA-TRELLO-0000001 shows the playlist file is an XML file under Filename "GX45_NT.xml;" <i><Playlist DeviceId="maxtrax1" FileName="GX45_NT.xml" Now="Fri May 13 19 51 48 2016"></i> as shown below in the ticket description, includes the Title if it was played or not, and Title, Type, and Artist. The caching unit will receive the request and then play via the Multicast IP address assigned, e.g. EGLA-TRELLO-0000055 <i>As output he requires a MPTS. Multicast IP address: 239.51.100.4:1234</i> Other include EGLA-TRELLO-0000081 at: <i>Multicast IP, Source and Port</i> <i>[SB] source 172.17.143.243/29 destination:port 239.19.23.4:5000</i> EGLA-TRELLO-000605 <i>{color:#1f497d}The current Multicast IP on the primary is 239.100.159.72 UDP 5000this should be changed to 239.100.159.71 UDP 5000.{color</i> EGLA-TRELLO-000606 <i>The Multicast IP can stay: 232.0.30.10:1010</i> <i>• The Source IP to use now is: 10.15.244.198</i> Additionally, at MC-EGLA-00042 show that (e.g., the Stingray UbiquiCAST broadcast system, including the UbiquiCAST music content origin server). The Ubiquicast server is the origin server where the generated multimedia assets are broadcasted to the Cable TV operator using a multicast address. In fact, the "Primary Server Not Broadcasting" is tracked as an error, at EGLA-TRELLO-0000629 as shown the file had an error and stop broadcasting, from the /data/* or cache local directory: <i>2016-02-19 20:17:51: [INPUT_ERROR] /data/final/029/0290383: INVALID_TRACK ERROR - [029] Invalid file detected by FileDecrypter.</i> <i>{code}</i>
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[i] responsive to receiving the request, the caching unit providing the multimedia asset to the broadcasting unit in the MPEG transport stream format.	Via AmazonSQS¹ (SQSMetadataPush) at EGLA-TRELLO-0000001, the system receives and sends requests to the queue. The captures of the MPEG Transport Streams or files with extension “.ts” as shown at EGLA-TRELLO-000514. As shown at EGLA-TRELLO-000514, the captured files with AC-3 format is used to encode media files are stored in the .ts format. - AC3_192k_100ch_OSE2_144k.ts - AC3_192k_100ch_OSE2_100k.ts The use of SPTS amd MPTS is derived from the MPEG Transport Stream as shown at EGLA-TRELLO-000454 <i>La liste des programmes par SPTS et multicast est jointe. Vous pouvez utiliser la configuration de Vidéotron2 et changer l'adresse IP.</i> At EGLA-TRELLO-000458: <i>SPTS - 50 Music channels + iConcerts HD (MP4 @ 5Mbps)</i> <i>SPTS: 239.1.8.101:8101 till 239.1.8.151:8151</i> <i>Source IPs per server:</i> <i>172.19.249.98/ 255.255.255.0/ GW 172.19.249.1</i> <i>172.19.249.99/ 255.255.255.0/ GW 172.19.249.1</i> <i>AC3 - Dolby audio encoding for both</i> At EGLA-TRELLO-000460 the multicast addresses used for MPEG TS are shown (Although, the configuration appears to indicate OSE1, not OSE2 or OSEII) <i>Server multicast interface IP address (1) – 172.17.30.54/29</i> <i>Server multicast interface IP address (2) – 172.17.30.53/29 (provided for future prod)</i>
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¹ <https://docs.aws.amazon.com/AWSJavaSDK/latest/javadoc/com/amazonaws/services/sqs/AmazonSQS.html>

2	The method of claim 1, wherein receiving the requests for the multimedia assets comprising receiving the requests over a REST API, Or:	See the cover REST API: At EGLA-TRELLO-000494 the log indicates that the MediaDownloader created an error due to an UnknownHostException for the <pre>INFO jvm 1 2018/08/04 17:34:31 2018-08-04 17:34:31,514 ERROR [MediaFileDownloader] - Failed to download media file : /data/video_linear/AV_30_MP2_12M/amb2117908.m2v INFO jvm 1 2018/08/04 17:34:31 java.io.IOException: com.stingray.sam.common.util.operation.OperationException: java.net.UnknownHostException: filestreaming-service.mtl.stingray.com: Name or service not known</pre> Additionally the log shows: <pre>INFO jvm 1 2018/08/04 17:34:31 at com.stingray.galaxieclient.download.mediafile.MediaFileDownloadStrategy.downloadFile(MediaFileDownloadStrategy.java:156) INFO jvm 1 2018/08/04 17:34:31 at com.stingray.galaxieclient.download.mediafile.MediaFileDownloader.sync(MediaFileDownloader.java:95) INFO jvm 1 2018/08/04 17:34:31 at com.stingray.galaxieclient.download.SyncTask.run(SyncTask.java:42)</pre> REST APIS are used to retrieve covers that is tracked by the Vault as shown at EGLA-TRELLO-000571 for the link at: http://covers.galaxie.ca/song/G:435275/001/showCoverORgener... That requires a browser or an HTML site to handle the screen. (See also EGLA-TRELLO-000572 to EGLA-TRELLO-000583). In some cases, these requests are done locally, for example at the server with httpd shown at EGLA-TRELLO-000469 shows the httpd configuration for “Apache” a common webserver²
	[a] wherein retrieving the plurality of media files is performed using a REST API.	The mediaDownload is a via a REST API, as REST APIs are used to connect to different servers as shown at See also EGLA-TRELLO-000572 to EGLA-TRELLO-000583. These servers may include mediafile.galaxie.ca, filestreaming-service.mtl.stingray.com

² <https://httpd.apache.org/docs/2.4/configuring.html>

3	The method of claim 1, wherein creating the custom HTML user interface for each media file is performed using Javascript.	The Galaxie Player or WebPlayer shares the resources for both Ubiquicast and Mobile Applications, hence the HTML page user interface that provide the HTTP-compatible responses (see Claim 1[e]) where the responses from the server indicate the use of HTML.
4	The method of claim 1, wherein encoding each of the media files include encoding each of the media files at a specified bit rate.	At EGLA-TRELLO-0000465 shows encoding at 192 Kbps. <i>Create a 20 minute recording of an OSE2 lineup (192 kbps - Dolby) to show up localized content</i> The EGLA-TRELLO-000475 shows encoding of ACr at 96Kbps and 128Kbps stereo, as shown: <i>Single program transport streams (SPTS) ok;</i> <i>Audio Codec should be AC3 96 o 128 Kbps, Stereo. ok;</i> <i>PMT table should be present. ok;</i> Other sources EGLA_TRELLO-000476 (shopw audio MPEG at 160Kbps), EGLA-TRELLO-000055 at 128Kbps AAC,
5	The method of claim 1, wherein encoding each of the media files include encoding each of the media files using a H.264 encoder.	EGLA-TRELLO-000654 sow the audio+OSE H.265 + data, indicating the use of H.264 and EGLA-TRELLO-000654 show the use of H.264 encoder. EGLA-TRELLO-0000385 use the Mpeg2 and H264 servers, hence supporting H.264 encoder
6	The method of claim 1, wherein the custom HTML user interfaces are configured to be rendered using a Webkit browser.	If a webkit browser is not used, a compatible HTML browser is use by Ubiquicast to render the screens that includes “Ads URL” As shown at EGLA-TRELLO-000470, the webPlayer deployment checklist shares the same elements as used by the Ubiquicast server. • Includes Provide ID, Operator ID • Skin, logo, log link • CSS and Google Analytics that includes javascript. As shown at EGLA-TRELLO-000496, the directory is created “20) create location /data/stillpic/background add background pngs (for OSE2 Only)”
7	The method of claim 1, wherein the video for the custom HTML interfaces includes video taken from the media file.	Ambience, iConcertsHD, Classica HD, and others were programmed as part of the UbiquiCAST device. At this moment there is no evidence on trello.com, but it is plausible.

8	The method of claim 1, wherein encoding the media file is performed using an AC-3 file format for audio content in the media file.	As shown at EGLA-TRELLO-000514, the AC-3 format is used to encode media files - <i>AC3_192k_100ch_OSE2_144k.ts</i> - <i>AC3_192k_100ch_OSE2_100k.ts</i> <i>T=</i> As shown at EGLA-TRELLO-000458, and the SPTS use the AC3 “Dolby audio encoding” <i>SPTS - 50 Music channels + iConcerts HD (MP4 @ 5Mbps)</i> <i>SPTS: 239.1.8.101:8101 till 239.1.8.151:8151</i> <i>Source IPs per server:</i> <i>172.19.249.98/ 255.255.255.0/ GW 172.19.249.1</i> <i>172.19.249.99/ 255.255.255.0/ GW 172.19.249.1</i> <i>AC3 - Dolby audio encoding for both</i>
9	The method of claim 1, wherein the custom HTML user interfaces are configured so that multiple custom HTML user interfaces of the multimedia asset can be retrieved using a web rendering engine.	At this moment there is no evidence on trello.com, but it is plausible.
10	A computer-implemented method comprising:	

[a] virtualizing a system including a virtualized caching server, wherein the virtualized caching server performs:	The server is virtualized, as sam-cache is a virtual server if stored on amazon. <i>When servers are pointed to Sam-Cache (sam-cacheyo3wi0hee8phaequ.stingraydigital.com), ...</i> See also Claim 1[a] for “largecache” and /data directory. The Galaxie Framework runs in a Java Virtual Machine, by using the libjvm.so library that is part of the Java Virtual Machine (JVM). as shown by EGLA-TRELLO-000488 hence the caching server 2016-02-04 08:52:00: [ERROR] bin/GalaxieAudioEngine [0x4bf249] 2016-02-04 08:52:00: [ERROR] stack trace: 2016-02-04 08:52:00: [ERROR] /usr/lib64/libGalaxieFramework.so : SignalTranslator<SegmentationFault>::SingletonTranslator::SignalHandler(int)+0x25 2016-02-04 08:52:00: [ERROR] /usr/java/latest/jre/lib/amd64/server/libjvm.so [0x2b042e739f59] 2016-02-04 08:52:00: [ERROR] /usr/java At MC-EGLA-000337 Dr. Shamos, Expert for Stingay testified that such storage was a virtual machine (emphasis added): <i>Within an exhibit to Dr. Shamos’ expert report, Dr. Shamos stated that “[t]he StillPic Generator and the Audio engine are the same piece of software. Thus one does not transmit to the other and the StillPic Generator virtual machine cannot act as ‘receiving system’ for the Audio Engine.” (Dkt. No. 188-5 at 12 (using ECF page number).)</i>
[b] receiving from a content provider, a request for at least one media stream for playback on a broadcast media channel, wherein the at least one media stream includes a plurality of multimedia items of different types;	The content provider, e.g. is AccessCommunicaiton1, as Playlist Device ID states at EGLA-TRELLO-0000070. The Playlist for the content to playback includes GXMC0176_NT.xml and different Identifiers for the plurality of multimedia items, in thi case. “Babalikan Mo Rin Ako” and “Haband May Buhay” with Ids=197 and 3375 for the playlist in use.

[c] obtaining content corresponding to the plurality of multimedia items from at least one source offering the content in at least one first format;

The content from the multimedia items includes retrieving, multimedia from the cache, as the image cover for the album, in this case from EGLA-TRELLO-0000070, as shown at

```
[ERROR] Cache - internal error: expected to get a state from key
[/song/L 2129124/showCoverORgenericCover/size_103_574.jpg]
[ERROR] Cache - internal error: expected to get a state from key
[/song/L 1835012/showCoverORgenericCover/size_103_574.jpg]
2016-05.
```

These covers are received from the website <http://covers.galaxie.ca/song/G:24275/001/ShowCoverOrGeneric....> As shown at EGLA-TRELLO-0000571 (See also other urls such as EGLA-TRELLO-000656n and EGLA-TRELLO-000657 that shows that the initial access to galaxie.ca was May 29th, 2014)..

Similarly, the multimedia items e.g. music is also downloaded using the MediaDownloader. For example as album cover are located at <http://mediafile.galaxie.ca/data/000/050/200/000050200610>



Other media assets are located at http://covers.galaxie.ca/song/G:49964/001/showCoverORgenericCover/size_20_574.jpg but are not accessible providing an error message and depicted at EGLA-TRELLO-000658.

As shown at EGLA-TRELLO-000548, and assets are downloaded and its “download_time” is recorded, as the log file reports:

```
mysql> select * from mediafile_metadata where uri like "%/data/final/188/1882328%";
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
-----+
----+
| id | uri | asset_id | role_code | format | product | public_key | storage | download_time |
```

```

+-----+-----+-----+-----+-----+-----+-----+-----+-----+
-----
+-----+
| 58526 | /data/final/188/1882328 | 1261691 | GX_FLAC_CORRECTED_48KHZ_CRYPT | FLAC_CRYPT | GALAXIE
| 20189162 | FILE_SYSTEM |
NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
-----
+-----+

```

The download of assets occurs from file-streaming-service.mtl.stingray.com (emphasis added), as shown below from ECLA-TRELLO-000494, as shown the file /data/video_linear/AV_30_MP2_12M/amb2117908.m2v is downloaded to what appears to be the Ambience channel

```

INFO | jvm 1 | 2018/08/04 17:34:31 | 2018-08-04 17:34:31,513 ERROR [MediaFileDownloadStrategy] -
Exception occurred after 20101 milliseconds.
INFO | jvm 1 | 2018/08/04 17:34:31 | 2018-08-04 17:34:31,514 ERROR [MediaFileDownloader] - Failed
to download media file : /data/video_linear/AV_30_MP2_12M/amb2117908.m2v
INFO | jvm 1 | 2018/08/04 17:34:31 | java.io.IOException:
com.stingray.sam.common.util.operation.OperationException: java.net.UnknownHostException:
filestreaming-
service.mtl.stingray.com: Name or service not known
INFO | jvm 1 | 2018/08/04 17:34:31 | at
com.stingray.galaxieclient.download.mediafile.MediaFileDownloadStrategy.downloadFile(MediaFileDo
wnloadStrategy.java:156)
INFO | jvm 1 | 2018/08/04 17:34:31 | at
com.stingray.galaxieclient.download.mediafile.MediaFileDownloader.sync(MediaFileDownloader.java:
95)
INFO | jvm 1 | 2018/08/04 17:34:31 | at
com.stingray.galaxieclient.download.SyncTask.run(SyncTask.java:42)

```

The server when connected via https returns that there is maintenance as shown at ECLA-TRELLO-0000659

[d] rendering a web page by a browser using the content;	See Claim 1[e] shows that HTML page exists and hence it is rendered by the UbiquiCAST server. The MC-EGLA-000619 further indicates that “<i>The Stingray Music Method transmits the data packet (e.g., the HTML or XML document) to a system (e.g., a device running the Stingray music app) including a video image generator, wherein the video image generator is configured to generate a video image (e.g., a video image including the song title “Back on the Chain Gang,” the artist name “Pretenders,” and the associated cover art image) using the video image specification and the system is configured to provide the generated video image (e.g., the video image including the song title “Back on the Chain Gang,” the artist name “Pretenders,” and the associated cover art image) to a device that is operable to display the video image to a user of the device.</i>” Therefore a webpage is rendered, and as discussed in Claim 1[e] and 10[c] the responses of all assets correspond to the HTTP protocol, hence a webpage is assembled and rendered.
---	---

[e] generating a temporal sequence of screen captures of the rendered web page, where each screen capture defines all the content of the web page at a given time, and at least two adjacent screen captures illustrate a dynamic change of at least a portion of the content over time;	The GalaxieStillPic Generator use the html content: Ads URL, Logo, Cover Page, and in collaboration with the AudioEngine, creates the multimedia asset to generate the output. As shown, each asset, playing and next ("not played), or played ar eshown at EGLA-TRELLO-000521 <i>[PLAYING] <Entry Event="12" Type="Playing" Category="020" Id="1123" Title="Veinte anos" Artist="Buena Vista</i> <i>[NEXT] <Entry Event="13" Type="Not Played" Category="M17" Id="1372" Title="Eres Mi Cancion" Artist="Rubén</i> Each of the screens are different as Id=113 and 1372 will show different Still Pictures generated from the HTML specification and HTTP Assets. Hence for each of the screen different media assets are generated and rendered, and two or more adjacent screen captures illustrate a dynamic change. <i><Entry Event="10" Type="Played" Category="208" Id="2009" Title="Here for You" Artist="Kygo feat. Ella He</i> <i><Entry Event="11" Type="Played" Category="209" Id="1377" Title="Sorry" Artist="Justin Bieber" Album="Pur</i> <i><Entry Event="12" Type="Playing" Category="204" Id="5537" Title="This Could Be Love " Artist="Borgeous &</i> <i><Entry Event="13" Type="Not Played" Category="212" Id="9127" Title="Only 1" Artist="The Aston Shuffle fe</i> The GalaxieStillPicGenerator, generates a temporal sequence of screens the, as shown in this error message, the GalaxieStillPicGenerator was (EGLA-TRELLO-000632) • Generating a .file at /data/video_realtime/0161735.tar • The Logo file needs to be loaded via HTTP • The Ads URL needs to be loaded via HTTP • If too many open files are opened then an error is thrown and a deletion is next. <i>2015-10-08 11:21:26,941 INFO [GalaxieStillPicGenerator] - Generating new</i> <i>/data/video_realtime//0161735.tar</i> <i>2015-10-08 11:21:26,941 ERROR [MediaGenerator] - Could not read Logo file</i> <i>2015-10-08 11:21:26,942 ERROR [MediaGenerator] - Could not read Ads URL</i> <i>Too many open files</i> <i>2015-10-08 11:21:26,942 ERROR [MediaGenerator] - High level exception: Too</i> <i>many open files</i> <i>2015-10-08 11:21:26,943 ERROR [GalaxieStillPicGenerator] - Could not</i> <i>generate fallback for /data/video_realtime//0161735.tar, deleting output file</i> <i>{quote}</i>
---	---

	[f] assembling the at least one media stream using the temporal sequence of screen captures; and	The temporal sequence of screen is demonstrated by GOP, and 10FPS (Frames per second) as shown EGLA-TRELLO-000568. <i>Glasfaser agreed to do 10.fps to open the GOP and allow for more refrence frames on their streams. Tests have been done on the back up server, which will need to be moved to the primary. Will need to confirm that date with the client.</i> <i>Settings to copy:</i> StillPic <i>service.properties</i>
	[g] providing the at least one media stream to the content provider for broadcast on the broadcast media channel.	See 1[i] as the generated media assets are broadcasted to the media channel, in the cases shown at 1[i] are the multicast addresses and SPTS/MPTS modes, depending on the cable provider. And at the encoding format the provider needs.
11	The method of claim 10, wherein the obtaining comprises: retrieving, for each of the plurality of multimedia items, at least one audio file corresponding to an audio component of the multimedia item and a plurality of screen captures corresponding to a video component of the multimedia item.	The audio file is used, e.g. AC-3, AAC, FLAC, or other formats at shown at Claim 1[g] the FLAC file or other audio files are then retrieved that correspond to the screen captures. At EGLA-TRELLO-000612 the log tracks that a particular son, with title and artist is played and that the proper audio is associated to that screen. <Entry Event="11" Type="Played" Category="209" Id="1377" Title="Sorry" Artist="Justin Bieber" Album="Pur <Entry Event="12" Type="Playing" Category="204" Id="5537" Title="This Could Be Love " Artist="Borgeous & <Entry Event="13" Type="Not Played" Category="212" Id="9127" Title="Only 1" Artist="The Aston Shuffle fe < The customers such as Bell request's use 720p and AC 2.0 at 384Kbps, with MPEG4 compression as shown at EGLA-TRELLO0-000642.
12	The method of claim 11, wherein the generating comprises:	

	combining the plurality of screen captures and the at least one audio file to create each of the plurality of multimedia items.	The audio component AC3 for example needs to be +3dB as shown at EGLA-TRELLO-000643, hence each audio file is combined or multiplexed with the screen capture video at a certain GOP. EGLA-TRELLO-000568 The Ubiquicast use FFMPEG as one the strategy to assemble all the stillpics as shown at EGLA-TRELLO-000644. <i>Upgrade Ubi to 4.3.3. and add :</i> <code>{code:java}</code> <code>generation.stillPicStrategyClassName=com.stingray.galaxie.stillpic.impl.StillPicDrawerFFmpegStrategy{code}</code> <i>To service.properties file</i> The use of the class <code>com.stingray.galaxie.stillpic.impl.StillPicDrawerFFmpegStrategy</code> plus the installation of FFMPEG are indicators that Ubiquicast 4.3.3 was used to include FFMPEG and GOP (see EGLA-TRELLO-000568) At EGLA-TRELLO-000631, the installation steps include ffmpeg, libarchive, libzen, and others. As the ticket reads “Install ffmpeg, libarchive, libzen, etc.” As other dependencies, at EGLA-TRELLO-000540, and its is updated as shown: <code>device_software_id = 124 ensure that all standard config params are specified dependencies:</code> <code>yum install SDL libavcodec.so.56 that comes with ffmpeg 2.7.2</code> <i>* Validate GalaxieClient functionality after update</i> The server list shows bell, maxtrax, talktak, anvia, videotron, and many others.
13	The method of claim 12, further comprising:	
	[a] the virtualized caching server detecting a change at the at least one webpage corresponding to at least one of the plurality of multimedia items;	The detection occurs when switching from one song to the next, as the page then switches the “Next” being played to be the “Playing” and updates the “Next” song to play. See 10[e]

	[b] in response to detecting the change, retrieving a new plurality of screen captures from the at least one webpage for the at least one of the plurality of multimedia items; and [c] reassembling the at least one of the plurality of multimedia items using the new plurality of screen captures to yield an updated multimedia item.	This occurs in the UbiquiCast by two ways: - As the playlist changes, all the assets can be regenerated using the GalaxieStillPicGenerator, - As the next song is set and the cache does not have the contents, GalaxieStillPicGenerator will generate the new assets for new songs. See claims 10[e], 10[c] and Claim 1[e]. GalaxieStillPicGenerator reassembles the multimedia and generates new assets. See Claim 10[e].
14	The method of claim 11, wherein the retrieving of the plurality of screen captures comprises obtaining the plurality of screen captures from a playback of a video on the at least one webpage.	Plausible but no evidence on trello.com
15	The method of claim 14, wherein the combining of the plurality of screen captures comprises metadata corresponding to at least one of a song title, an artist, and a music genre.	N/A.,
16	The method of claim 10, further comprising: the virtualized caching server identifying the at least one webpage based on a channel identifier associated with the broadcast media channel.	As shown at ECLA-TRELLO-0000069 is shown as, where the channel identifier is defined: <i>[PLAYING] <Entry Event="12" Type="Playing" Category="020" Id="1123" Title="Veinte anos" Artist="Buena Vista</i> <i>[NEXT] <Entry Event="13" Type="Not Played" Category="M17" Id="1372" Title="Eres Mi Cancion" Artist="Rubén</i> An associated playlist is pushed to SQS (Amazon) via /data/metadata/GXMC0176_NT.xml as the playlist for the channel assigned. <i>Pushing file to SQS: /data/metadata/GXMC0176_NT.xml</i> <i><Playlist DeviceId="accesscommunication1" FileName="GXMC0176_NT.xml" Now="Fri May 20 07 24 34 2016"</i> <i>TimezoneId="America/Regina"></i>
17	The method of claim 10, further comprising:	

	the virtualized server querying the content provider to determine the second format, wherein the second format corresponds to a Moving Picture Experts Group (MPEG) format.	See MPTS and SPTS at claim 1[i] and Claim 3.
18	The method of claim 10, wherein the content provider is a cable television operator or a satellite television operator.	See Claim 12 and ECLA-TRELLO-0000517 with a list of cable operators.
19	The method of claim 10, wherein providing the at least one media stream to the content provider comprises streaming the at least one media stream to an MPEG multiplexer associated with the content provider.	An MVPD or a Cable/Satellite Operator uses a multiplexer to “mix” all the channels that content providers sell to consumers. E.g. ESPN, FOX, 50 Music Channels, etc³. The Device Proposal does not permit MVPDs to offer their services consistent with the content licenses and retransmission consent requirements under which they acquire distribution rights. For example, using native architectures or apps, MVPDs may assure that programming is kept in the right neighborhood, such as a news channel placed in a news “neighborhood” or a premium service kept adjacent to its multiplex channels. They may assure that search returns do not place a programmer next to an X-rated offering. Under the Device Proposal, the MVPD cannot fulfill these requirements. The Device Proposal now acknowledges this lack of protection, but declines to advance a proposal that respects these licensing conditions. Instead, the proposal now suggests that all aspects of the numbering, grouping and presentation of channels be defined by FCC regulation rather than marketplace arrangements that reflect copyright license conditions, retransmission agreements, local laws and expectations, and an MVPD’s own decisions about how to present services—decisions that are protected by the First Amendment.
20	The method of claim 10, further comprising:	

³ FCC Record: A Comprehensive Compilation of Decisions, Reports, Public Notices, and Other Documents of the Federal Communications Commission of the United States. (2015). United States: Federal Communications Commission.

the virtualized caching server provisioning, on at least one server, at least one virtual machine for performing the receiving, obtaining, generating, assembling, and providing.	At least sam-cache-* would be storing playlists and other resources used for storage, as these virtualized servers are provided by Amazon Web Services (EGLA-TRELLO-0000481). The server is located at 143.224.220.150 ping sam-cache-yo3wi0hee8phaequ.stingraydigital.com PING sam-cache-yo3wi0hee8phaequ.stingraydigital.com/ (143.244.220.150): 56 data bytes The name servers are: ns-1392.awsdns-46.org ns-1924.awsdns-48.co.uk ns-196.awsdns-24.com ns-513.awsdns-00.net The other source that is cache is located at 192.48.220.115 PING file-streaming-service.mtl.stingray.com (192.48.220.115) The name servers are: ns-1124.awsdns-12.org ns-1899.awsdns-45.co.uk ns-422.awsdns-52.com ns-658.awsdns-18.net See EGLA-TRELLO-0000661 and EGLA-TRELLO-0000660. The AWS DNS is Amazon Web Services DNS as shown at EGLA-TRELLO-0000662 that demonstrates the use of AWS DNS or Amazon Web Services, where those servers are located and are virtualized cloud-based platforms. The Amazon Elastic Cloud (EC2) is the most popular cloud-based platform from Amazon https://aws.amazon.com/ec2/ Additionally, Dr. Shamos, Stingray's expert testified that "At MC-EGLA-000337 Dr. Shamos, Expert for Stingray testified that such storage was a virtual machine (emphasis added): <i>Within an exhibit to Dr. Shamos' expert report, Dr. Shamos stated that "[t]he StillPic Generator and the Audio engine are the same piece of software. Thus one does not transmit to the other and the StillPic Generator virtual machine cannot act as 'receiving system' for the Audio</i>
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		<i>Engine.” (Dkt. No. 188-5 at 12 (using ECF page number).)”</i>
21	The method of claim 10, wherein virtualizing the system is performed using one of Docker, Xenserver, or a virtual machine.	The use of the technology for virtual machines for Amazon is EC2, VmWare or Docker.
22	The method of claim 10, wherein virtualizing the system includes virtualizing the system to include at least one virtualized multicasting server that perform the providing the at least one media stream to the content provider.	At MC-EGLA-000337 Dr. Shamos, Expert for Stingay testified that such storage was a virtual machine (emphasis added): <i>Within an exhibit to Dr. Shamos’ expert report, Dr. Shamos stated that “[t]he StillPic Generator and the Audio engine are the same piece of software. Thus one does not transmit to the other and the StillPic Generator virtual machine cannot act as ‘receiving system’ for the Audio Engine.” (Dkt. No. 188-5 at 12 (using ECF page number).)</i> The ubiquitous is used for primary and backup to multicast, hence if the StillPic Generator is a virtual machine, the multicasting unit should be another Virtual Machine.
23	The method of claim 10, wherein virtualizing the system is performed for one channel, wherein the virtualized caching server is operable for one channel, wherein virtualizing the system is repeated for each one of a plurality of other channels.	Not evidence found on trello.com
24	The method of claim 10, wherein receiving the request is performed using a JSON API.	By DOE, all requests made with AmazonSQS are JSON however JSON object format is unknown. Amazon documents that AWS JSON Procols for AmazonSQS are utilized ⁴ See EGLA-TRELLO-0000663
25	A computer-implemented method comprising:	
	[a] receiving, from a content provider, a request for at least one media stream for playback on a broadcast media channel, wherein the at least one media stream includes a plurality of multimedia items of different types;	See Claim 10[b]

⁴ <https://docs.aws.amazon.com/AWSSimpleQueueService/latest/SQSDeveloperGuide/sqs-json-faqs.html>

[b] obtaining content corresponding to the plurality of multimedia items from at least one source offering the content in at least one first format, performed over a first TCP-IP socket of a caching unit;	The content of us first retrieved from playlist server or sam-cache-.. at EGLA-TRELLO-000526 <i>“Sam-Cache (sam-cacheyo3wi0hee8phaequ.stingraydigital.com), some playlists do not download (at times, all playlists fail to download).”</i> Then, the plurality of multimedia items is exchanged via AmazonSQS that operates over TCP/IP asynchronous calls. Amazon SQS states⁵: Second TCP/IP socket: Amazon SQS works on a massive scale, processing billions of messages per day. You can scale the amount of traffic you send to Amazon SQS up or down without any configuration. Amazon SQS also provides extremely high message durability, giving you and your stakeholders added confidence. This is depicted at EGLA-TRELLO-000543 where the it says: <i>“Please make sure that the galaxie client on the following server is pushing on SQS {color:#000000}upctelemach1, dcg1, Tigo-ES, yes1, Bodeli1, hot1, dery1, cablemas-chetumel1{color} Please double check the timezone and galaxieclient on: {color:#000000 }northwestel1{color} if possible, please coordonnate a fallback on the primary server, for the folllwing servers(back is currently configure in the DB):”</i> at EGLA-TRELLO-0000556 it says that <i>“We need to raise the number of next song visible the XML metadata files that the Ubi are pushing to SQS.{color “</i> At EGLA-TRELLO-000563 the SQSMetadataPush fails to synchon the metadata in XML format <i>Push failed for /data/metadata/GX31_NT.xml : com.amazonaws.AmazonClientException: Unable to execute HTTP request: Connect to 10.23.3.1:8081 timed out</i> At EGLA-TRELLO-000588 the SQSMetadataPush operates pushin tht eplaylist to the SQS queue, as shown: 2016-05-20 07 24 30,837 INFO [SQSMetadataPush] - [014] Push success
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	2016-05-20 07 24 30,925 INFO [SQSMetadataPush] - [189] Pushing file to SQS: /data/metadata/GX189_NT.xml <Playlist DeviceId="accesscommunication1" FileName="GX189_NT.xml" Now="Fri May 20 07 24 30 2016" TimezoneId="America/Regina"> At EGLA-TRELLO-000609 shows that Pushing a file to SQS is done as follows: 2016-05-13 19 51 48,699 INFO [SQSMetadataPush] - Pushing file to SQS! 2016-05-13 19 51 48,700 INFO [request] - Sending Request: POST https://queue.amazonaws.com //008306160229/GalaxieMetadataPushQueue Parameters: (MessageBody: <feff><?xml version="1.0" encoding="utf-8"?> <Playlist DeviceId="maxtrax1" FileName="GX45_NT.xml" Now="Fri May 13 19 51 48 2016"> The Playlist with entries used with different events, are shown at: <Entry Event="00" Type="Played" Category="200" Id="7054" Title="Stingray ID.045.Eclectic Electronic.v1.w <Entry Event="01" Type="Played" Category="211" Id="2467" Title="Calm Down" Artist="Katy B, Four Tet & Terr <Entry Event="02" Type="Played" Category="201" Id="7825" Title="Blind Heart" Artist="Cazette & Terr <Entry Event="03" Type="Played" Category="212" Id="9133" Title="Lies" Artist="Jane XØ" Album="" Composer <Entry Event="04" Type="Played" Category="211" Id="7174" Title="You're Good but I'm Better" Ar <Entry..... Therefore, the SQS system is a TCP/IP and provides the content in at least one first format, corresponding to a plurality of multimedia items (e.g. id 7054, 2467, 7825, 9133, 7174, etc...) See also EGLA-TRELLO-000525 2016-05-13 19:51:48,699 INFO [SQSMetadataPush] - Pushing file to SQS! 2016-05-13 19:51:48,700 INFO [request] - Sending Request: POST https://queue.amazonaws.com //008306160229/GalaxieMetadataPushQueue Parameters: (MessageBody: <feff><?xml version="1.0" encoding="utf-8"?> <Playlist DeviceId="maxtrax1" FileName="GX45_NT.xml" Now="Fri May 13 19:51:48 2016">
rendering a web page by a browser using the content;	See Claim 10[c]

⁵ <https://aws.amazon.com/sqs/faqs/>

	generating a temporal sequence of screen captures of the rendered web page, where each screen capture defines all the content of the web page at a given time, and at least two adjacent screen captures illustrate a dynamic change of at least a portion of the content over time;	See Claim 10[d]
	assembling the at least one media stream using the temporal sequence of screen captures;	See Claim 10[e]
	providing the at least one media stream to the content provider for broadcast on the broadcast media channel; and	See Claim 10[f]

providing, at a second TCP/IP socket of the caching unit, a status of the obtaining, generating, and assembling.	The content of us first retrieved from playlist server or sam-cache-.. at EGLA-TRELLO-000526 <i>“Sam-Cache (sam-cacheyo3wi0hee8phaequ.stingraydigital.com), some playlists do not download (at times, all playlists fail to download).”</i> Then, the plurality of multimedia items is exchanged via AmazonSQS that operates over TCP/IP asynchronous calls. Amazon SQS states⁶: Second TCP/IP socket: Amazon SQS works on a massive scale, processing billions of messages per day. You can scale the amount of traffic you send to Amazon SQS up or down without any configuration. Amazon SQS also provides extremely high message durability, giving you and your stakeholders added confidence. This is depicted at EGLA-TRELLO-000543 where the it says: <i>“Please make sure that the galaxie client on the following server is pushing on SQS {color:#000000}upctelemach1, dcg1, Tigo-ES, yes1, Bodeli1, hot1, dery1, cablemas-chetumel1{color} Please double check the timezone and galaxieclient on: {color:#000000 }northwestel1{color} if possible, please coordonnate a fallback on the primary server, for the follwing servers(back is currently configure in the DB):”</i> at EGLA-TRELLO-0000556 it says that <i>“We need to raise the number of next song visible the XML metadata files that the Ubi are pushing to SQS.{color “</i> At EGLA-TRELLO-000563 the SQSMetadataPush fails to synchon the metadata in XML format <i>Push failed for /data/metadata/GX31_NT.xml : com.amazonaws.AmazonClientException: Unable to execute HTTP request: Connect to 10.23.3.1:8081 timed out</i> At EGLA-TRELLO-000588 the SQSMetadataPush operates pushin tht eplaylist to the SQS queue, as shown: 2016-05-20 07 24 30,837 INFO [SQSMetadataPush] - [014] Push success
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		2016-05-20 07 24 30,925 INFO [SQSMetadataPush] - [189] Pushing file to SQS: /data/metadata/GX189_NT.xml <Playlist DeviceId="accesscommunication1" FileName="GX189_NT.xml" Now="Fri May 20 07 24 30 2016" TimezoneId="America/Regina"> At EGLA-TRELLO-000609 shows that Pushing a file to SQS is done as follows: 2016-05-13 19 51 48,699 INFO [SQSMetadataPush] - Pushing file to SQS! 2016-05-13 19 51 48,700 INFO [request] - Sending Request: POST https://queue.amazonaws.com //008306160229/GalaxieMetadataPushQueue Parameters: (MessageBody: <feff><?xml version="1.0" encoding="utf-8"?> <Playlist DeviceId="maxtrax1" FileName="GX45_NT.xml" Now="Fri May 13 19 51 48 2016"> The Playlist with entries used with different events, are shown at: <Entry Event="00" Type="Played" Category="200" Id="7054" Title="Stingray ID.045.Eclectic Electronic.v1.w <Entry Event="01" Type="Played" Category="211" Id="2467" Title="Calm Down" Artist="Katy B, Four Tet & Terr <Entry Event="02" Type="Played" Category="201" Id="7825" Title="Blind Heart" Artist="Cazette & Terr <Entry Event="03" Type="Played" Category="212" Id="9133" Title="Lies" Artist="Jane XØ" Album="" Composer <Entry Event="04" Type="Played" Category="211" Id="7174" Title="You're Good but I'm Better" Ar <Entry..... Therefore, the SQS system is a TCP/IP and provides the content in at least one first format, corresponding to a plurality of multimedia items (e.g. id 7054, 2467, 7825, 9133, 7174, etc...) See also EGLA-TRELLO-000525 2016-05-13 19:51:48,699 INFO [SQSMetadataPush] - Pushing file to SQS! 2016-05-13 19:51:48,700 INFO [request] - Sending Request: POST https://queue.amazonaws.com //008306160229/GalaxieMetadataPushQueue Parameters: (MessageBody: <feff><?xml version="1.0" encoding="utf-8"?> <Playlist DeviceId="maxtrax1" FileName="GX45_NT.xml" Now="Fri May 13 19:51:48 2016">
26	A computer-implemented method comprising:	
	[a] at a caching unit:	Sam-Cache unit as well as Ubiquicast's /data directory See Claim 1[a]

⁶ <https://aws.amazon.com/sqs/faqs/>

[b] receiving, from a content provider, a request for at least one media stream for playback on a broadcast media channel, wherein the at least one media stream includes a plurality of multimedia items of different types;	See Claim 10[b]
[c] obtaining content corresponding to the plurality of multimedia items from at least one source offering the content in at least one first format;	See Claim 10[c]
[d] rendering a web page by a browser using the content;	See Claim 10[d]
[e] generating a temporal sequence of screen captures of the rendered web page, where each screen capture defines all the content of the web page at a given time, and at least two adjacent screen captures illustrate a dynamic change of at least a portion of the content over time;	See Claim 10[e]
[f] assembling the at least one media stream using the temporal sequence of screen captures;	See Claim 10[f]
[g] at a multicast unit that is operable connected to the caching unit:	The multicasting component part of the UbiquiCAST is operatable connected to the caching unit as the multicasting of MPTS and SPTS are described.
[h] providing the at least one media stream to the content provider for broadcast on the broadcast media channel;	The Ubiquicast provides one or many streams to the cable operator as SPTS or MPTS, see EGLA-TRELLO-0000458. <i>SPTS - 50 Music channels + iConcerts HD (MP4 @ 5Mbps)</i> <i>SPTS: 239.1.8.101:8101 till 239.1.8.151:8151</i>

[i] recording the media stream from the caching unit to produce a recorded media stream; and	See EGLA-TRELLO-0000590, states that: <i>“Create a 20 minute recording of an OSE2 lineup (192 kbps - Dolby) to show up localized content.”</i> See EGLA-TRELLO-000636 states that: <i>“The team is trying to get a licence to broadcast F4K in Korea. To do so, we need to supply a 24 hours recording (00:00-24:00).”</i>
[j] upon a fault being detected at the caching unit, providing at least a portion of the recorded media stream to the content provider.	Under the Doctrine of the Equivalence (DOE). The recorded content corresponds to the backup system Cache information, however a POSITA will know that a Transport Stream that was recorded (as shown Claim 26[i]) can broadcast and replace the contents from the primary server upon failure The primary and Backup servers are EGLA-TRELLO-0000458 show: <i>Management IPs:</i> <i>Primary</i> <i>GB1: 10.200.138.20</i> <i>Drac: 10.200.138.10</i> <i>Backup</i> <i>GB1: 10.200.138.21</i> <i>Drac: 10.200.138.11</i>

EXHIBIT 27

AMENDMENT UNDER 37 C.F.R. § 1.116
Appln. No.: 17/493,490

Docket No.: 100720-00003

AMENDMENTS TO THE CLAIMS

1. through 20. (canceled).

21. (previously presented) A method of providing a media stream from a computing system comprising a caching unit and at least one multicasting server, the method comprising:

receiving, at the caching unit, a request from the at least one multicasting server for at least one media stream for playback on a broadcast media channel, wherein the request comprises a requested format;

obtaining, at the caching unit, content from the internet corresponding to a plurality of multimedia items from at least one website offering the content in at least one first format, wherein the obtaining comprises:

retrieving, for each multimedia item of the plurality of multimedia items, at least one audio file corresponding to an audio component of the multimedia item and a plurality of screen captures corresponding to a video component of the multimedia item; rendering a webpage by a browser using the content; generating a plurality of screen captures of the rendered web page using a headless rendering engine;

generating, at the caching unit, the plurality of multimedia items in the requested format based on the content from the internet, the generating comprising, for each of the plurality of multimedia items:

assembling a video component of a multimedia item using the plurality of screen captures,

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combining the plurality of screen captures and the at least one audio file, thereby creating the multimedia item, and

saving the multimedia item at the caching unit;

providing at least one media stream to a content provider for multicasting on the broadcast media channel, wherein the providing comprises:

assembling the at least one media stream in the requested format using the plurality of the multimedia items saved at the caching unit;

detecting a change at the at least one website corresponding to at least one of the plurality of multimedia items saved at the caching unit;

in response to the detecting the change, retrieving a new plurality of screen captures from the at least one website for the at least one of the plurality of multimedia items; and

reassembling the at least one of the plurality of multimedia items using the new plurality of screen captures, thereby creating at least one updated multimedia item.

22. (previously presented) The method according to claim 21, wherein the retrieving the plurality of screen captures corresponding to the video component of the multimedia item comprises obtaining the plurality of screen captures from a playback of a video on the at least one website.

23. (previously presented) The method according to claim 21, further comprising: adding metadata to the at least one media stream as a program identifier (PID) in a Moving Picture Experts Group (MPEG) transport stream.

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24. (previously presented) The method according to claim 21, wherein the content provider is one of a cable television operator and a satellite television operator.

25. (previously presented) The method according to claim 21, wherein the providing at least one media stream to the content provider comprises streaming the at least one media stream to a Moving Picture Experts Group (MPEG) multiplexer associated with the content provider.

26. (previously presented) The method according to one of claims 21-25, further comprising:

performing a recording function at the at least one multicasting server, wherein the recording function records the at least one media stream.

27. (previously presented) The method according to claim 26, further comprising:
checking whether the caching unit is operational; and
upon a determination that the caching unit is not operational, multicasting a pre-recorded media stream.

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28. (previously presented) A system comprising:

- a caching unit comprising at least one processor;
- at least one multicasting server;
- a computer-readable storage medium having stored thereon instructions which, when executed by the at least one processor, cause the system to perform a method comprising:
 - receiving, at the caching unit, a request from the at least one multicasting server for at least one media stream for playback on a broadcast media channel, wherein the request comprises a requested format;
 - obtaining, at the caching unit, content from the internet corresponding to a plurality of multimedia items from at least one website offering the content in at least one first format, wherein the obtaining comprises:
 - retrieving, for each multimedia item of the plurality of multimedia items, at least one audio file corresponding to an audio component of the multimedia item and a plurality of screen captures corresponding to a video component of the multimedia item;
 - rendering a webpage by a browser using the content;
 - generating a plurality of screen captures of the rendered web page using a headless rendering engine;
 - generating, at the caching unit, the plurality of multimedia items in the requested format based on the content from the internet, the generating comprising, for each of the plurality of multimedia items:
 - assembling a video component of a multimedia item using the plurality of screen captures,

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combining the plurality of screen captures and the at least one audio file,
thereby creating the multimedia item, and
saving the multimedia item at the caching unit;
providing at least one media stream to a content provider for multicasting on the
broadcast media channel, wherein the providing comprises:
assembling the at least one media stream in the requested format using the
plurality of the multimedia items saved at the caching unit;
detecting a change at the at least one website corresponding to at least one of the
plurality of multimedia items saved at the caching unit;
in response to the detecting the change, retrieving a new plurality of screen
captures from the at least one website for the at least one of the plurality of multimedia
items; and
reassembling the at least one of the plurality of multimedia items using the new
plurality of screen captures, thereby creating at least one updated multimedia item.

29. (new) The method according to claim 21, wherein the headless rendering engine is a
browser rendering engine compatible with HTML.

30. (new) The method according to claim 21, wherein the generating a plurality of
screen captures comprises generating the plurality of screen captures at one of a laptop, a smart
phone, a personal computer, and a personal digital assistant.

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31. (new) The method according to claim 21, further comprising, at the caching unit, encoding the at least one audio file using AC-3.

32. (new) The method according to claim 21, further comprising, at the caching unit, encoding the video component using H.264.

33. (new) The method according to claim 21, wherein the combining the plurality of screen captures and the at least one audio file comprises one of creating an overlapping video and replacing video in a multimedia item playlist.

34. (new) The method according to claim 21, wherein the at least one multimedia stream is formatted according to one of HTTP Live Streaming, HTTP, and RTSP.

35. (new) The method according to claim 21, wherein the request for the at least one media stream for playback comprises a GetPlaylist command via an HTTP Request.

36. (new) The method according to claim 21, wherein the at least one website comprises at least one of javascript and Cascading Style Sheets (CSS).

37. (new) The method according to claim 21, wherein the obtaining further comprises the caching unit using Javascript Object Notation (JSON) available via an HTTP Request.

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38. (new) The method according to claim 21, further comprising encoding the plurality of multimedia items and plotting a status of the plurality of multimedia items using a graphical user interface.

39. (new) The system according to claim 28, wherein the generating the plurality of screen captures comprises obtaining the plurality of screen captures from a playback of a video on the rendered web page.

40. (new) The system according to claim 28, wherein the providing the at least one media stream further comprises adding metadata to the at least one media stream as an additional Program Identifier (PID) in an MPEG transport stream.

41. (new) The system according to claim 28, wherein the content provider is one of a cable television operator and a satellite television operator.

42. (new) The system according to claim 28, wherein the providing the at least one media stream to the content provider further comprises providing the at least one media stream to an MPEG multiplexer associated with the content provider.

43. (new) The system according to claim 28, further comprising:
the at least one multicasting server performing a recording function recording the at least one media stream.

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44. (new) The system according to claim 28, further comprising:
determining whether the caching unit is operational, and, upon a determination that the caching unit is not operational, multicasting a pre-recorded media stream.

45. (new) The system according to claim 28, wherein the headless rendering engine is a browser-rendering engine compatible with HTML.

46. (new) The system according to claim 28, wherein the generating the plurality of screen captures comprises generating the plurality of screen captures at one of a laptop, a smart phone, a personal computer, and a personal digital assistant.

47. (new) The system according to claim 28, further comprising, at the caching unit, encoding the at least one audio file using one of AC-3 and MP3.

48. (new) The method according to claim 28, further comprising, at the caching unit, encoding the video component using one of H.264 and MPEGVIDEO.

49. (new) The method according to claim 28, wherein the request for the at least one media stream for playback comprises a GetPlaylist command via an HTTP Request.

50. (new) The method according to claim 28, wherein the retrieving comprises retrieving using one of HTTP Live Streaming, HTTP, and RTSP.

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51. (new) The method according to claim 28, wherein the at least one website comprises at least one of javascript and Cascading Style Sheets (CSS).

52. (new) The method according to claim 28, wherein the plurality of multimedia items are encoded using one of MPEG4 Part 14 and MPEG TS.

53. (new) The method according to claim 28, wherein the combining the plurality of screen captures and the at least one audio file comprises one of creating an overlapping video and replacing video in a multimedia item playlist.

54. (new) The method according to claim 28, wherein the computer-readable storage medium is one of random access memory (RAM), a solid state drive, and a hybrid drive.

EXHIBIT 28

FEATURES OF YOUR
U-VERSE®
REMOTE CONTROL



Channel Lineup

For current channel lineup, including local listings, go to att.com/channellineup.



Get answers and manage your account 24/7

Download the myAT&T app at att.com/myattapp from your mobile device.

Go to the Help menu of your TV to view the U-verse legal guide including the U-verse Terms of Service and Privacy Policy.



FIND YOUR CHANNELS

2-69	Local Channels
720-779	Regional Sports Networks ⁷
1000-1999	HD Channels ⁹
1002-1069	Local Channels HD ^{1, 9}
1720-1780	Regional Sports Networks HD ^{7, 9}

Channel and programming availability may vary by geography and is subject to change without notice. For your most current channel lineup, please visit att.com/channellineup.

U-VERSE TV APPS

Press **GO INTERACTIVE** on your remote control to choose from lots of apps, including seasonal apps, so check back often to see what's currently available.

201/1201 HD	News Multiview ²
218/1218	CNBC Application
301/1301 HD	Kids Multiview ²
411	U-verse Help Videos
601/1601 HD	Sports Multiview ²
9900	Phone Services
9910	Account Manager

STINGRAY MUSIC

Enjoy music to match your mood with Stingray Music!

- Go to channels 5100-5174 and press **OK** on your remote to begin listening.
- OR
- Search within the Stingray Music app. Press **GO INTERACTIVE** or tune to channel 500/1500 HD.

U-verse Internet service (Elite or higher) required.

U-basic TV plan available; includes local channels only. Installation Fee applies. Call for details. ¹Local HD channels vary by market. ²Channels/content in Multiview based on TV programming package. ³Excludes programming subject to blackouts. ⁴Channels not available in all areas. ⁵TV plan and geographic restrictions apply. Go to uverse.com/pac12 to check availability in your area. ⁶SEC Network: Restrictions apply. Go to uverse.com/sec to check availability in your area. ⁷Access to out-of-market regional sports channels does not provide access to out-of-market games. Games subject to blackout. ⁸Monthly subscription fee and monthly HD Access Fee apply. ⁹HD access available for additional monthly charge. ¹⁰HD Premium Tier requires HD access and an additional monthly charge. ¹¹Paquete Español: Included in U200 Latino, U300 Latino, and U450 Latino; available in other packages for a monthly subscription fee. ¹²The Playboy TV channels are intended for adults over the age of 18. Use Parental Controls to block access to the channels and/or the ability to order the channels via Account Manager (ch. 9910). To manage existing Parental Controls, press the **MENU** button, scroll to Options, then Parental Controls. Our TV channel listings are updated frequently as the lineup for each package grows.

Standard Channels

SD/HD

		U-family	U200	U200 Latino	U300	U300 Latino	U450	U450 Latino
5StarMAX	840/1840 HD							
A&E	132/1132 HD							
A&E - West	132/1132 HD							
ACC Network	610/1610 HD							
Account Manager	9910							
ActionMAX	836/1836 HD							
ActionMAX - West	837/1837 HD							
Adults Only VOD Storefront	956							
AMC	119/1119 HD							
AMC - West	119							
American Heroes Channel	259/1259 HD							
America's Value Channel	142							
Animal Planet	252/1252 HD							
Animal Planet - West	253							
Aspire	158/1158 HD							
AT&T Pay Per View Events in HD	1102							
AT&T U-verse Front Row	100							
AXS TV	1106 HD							
Baby First TV en Español	3063							
Baby First TV	310							
Baby TV	330							
Bandamax	3146							
BBC America	122/1122 HD							
BBC News	207/1207 HD							
BET (Black Entertainment Television)	155/1155 HD							
BET (Black Entertainment Television) West	156/1156 HD							
BET Gospel	516							
BET Her	515							
BET Jams	508							
BET Soul	522							
Bloomberg Television	222/1222 HD							
Boomerang	327							
Boomerang en Español	3053							
Bounce	1153 HD							
Bravo - West	181/1181 HD							
BTN	650/1650 HD							
BYU	567/1567 HD							
Canal 22	3022							
Cars.TV	280/1280 HD							
Cartoon Network	325/1325 HD							
Cartoon Network - West	326/1326 HD							
CBS Sports Network	643/1643 HD							
CGTN	3602							
Cheddar News	1219 HD							
Cine Estelar	3124							
Cine Mexicano	3134							
Cine Nostalgia	3125							
Cinelatino	3126							
Cinemax	832/1832 HD							
Cinemax Latino	846/1846 HD							
Cinemax - West	833/1833 HD							
Click to Order-MGM+ Preview	851							
Click to Order-HBO Preview	1000							
Click to Order-Showtime Preview	300							
Click to Order-Starz Preview	961							
Cleo TV	154/ 1154 HD							

SD/HD

		U-family	U200	U200 Latino	U300	U300 Latino	U450	U450 Latino
CMT (Country Music Television) - East	525/1525 HD							
CMT (Country Music Television) - West	526/1526 HD							
CMT Music	527							
CNBC	216/1216 HD							
CNBC Application	218							
CNBC World	217							
CNN (Cable News Network)	202/1202 HD							
CNN en Español	3110							
CNN Headline News	203/1203 HD							
CNNI (CNN International)	205							
College Footbal Pay-Per-View	636/1636/1637 HD							
Comedy Central	140/1140 HD							
Comedy Central - West	141/1141 HD							
Comedy.TV	281/1281 HD							
Cooking Channel	456/1456 HD							
CRAVE	159							
Cozi TV	70							
Crime & Investigation Network	163/1163 HD							
C-SPAN	230							
C-SPAN2	231							
C-SPAN3	232							
Daystar	563/1563 HD							
Dazzle	82							
De Pelicula	3128							
De Pelicula Clasico	3129							
Destination America	465/1465 HD							
Discovery Channel	120/1120 HD							
Discovery Channel - West	121							
Discovery en Español	3102							
Discovery Familia	3103							
Discovery Family Channel	335/1335 HD							
Discovery Life Channel	466							
Disney Channel	302/1302 HD							
Disney Channel - West	303/1303 HD							
Disney Junior	306/1306 HD							
Disney Junior - West	306/1306 HD							
Disney XD	304/1304 HD							
Disney XD - West	305/1305 HD							
Disney en Español	3052							
DVRAPP	9999							
EarthxTV	1267 HD							
E! Entertainment Television	134/1134 HD							
E! Entertainment Television - West	135							
ESTV	282/1282 HD							
ESPN	602/1602 HD							
ESPN Deportes	3113/3313 HD							
ESPN2	606/1606 HD							
ESPNNEWS	604/1604 HD							
ESPNU	605/1605 HD							
Estrella	3024							
Eternal Word Television Network (EWTN)	562							
EWTN Espanol	3077							
Family Entertainment TV	578							
FidoTV	269/1269 HD							
FLIX	890							
FM	535/1535 HD							

SD/HD

		U-family	U200	U200 Latino	U300	U300 Latino	U450	U450 Latino
FMC (Family Movie Classics)	172							
Food Network	452/1452 HD							
Food Network - West	453/1453 HD							
FOROtv	3108							
FOX Business Network	211/1211 HD							
FOX Deportes	3114/1655 HD							
FOX News Channel	210/1210 HD							
FOX Sports1	652/1652 HD							
FOX Sports2	651/1651 HD							
Freeform	178/1178 HD							
Freeform - West	179/1179 HD							
Fuse	182/1182 HD							
FX Movie Channel	792/1792 HD							
FX Network	129/1129 HD							
FX Network - West	129/1129 HD							
FXX	128/1128 HD							
FYI	272/1272 HD							
FYI - West	272/1272 HD							
Great American Family HD	1529							
Galavisión	3003/3303 HD							
Galavisión - West	3004							
GEM Network	430							
getTV	73							
Go 4 It	84/1084							
Golf Channel	641/1641 HD							
GolTV	656/1656 HD							
Great American Family	529							
Great American Living HD	1676							
GRIT	1071 HD							
GSN (Game Show Network)	173/1173 HD							
Hallmark Channel	365/1365 HD							
Hallmark Movies & Mysteries	366/1366 HD							
HBO (Home Box Office)	802/1802 HD							
HBO (Home Box Office) - West	803/1803 HD							
HBO Comedy	810/1810 HD							
HBO Comedy - West	811/1811 HD							
HBO Family	806/1806 HD							
HBO Family - West	807/1807 HD							
HBO Latino	814/1814 HD							
HBO Latino - West	815/1815 HD							
HBO Signature	808/1808 HD							
HBO Signature - West	809/1809 HD							
HBO Zone	812/1812 HD							
HBO Zone - West	813/1813 HD							
HBO2	804/1804 HD							
HBO2 - West	805/1805 HD							
Heroes & Icons ⁴	137/1137 HD							
History	256/1256 HD							
History - West	256/1256 HD							
History en Español	3104							
HITN	3055							
Home & Garden Television (HGTV)	450/1450 HD							
Home & Garden Television (HGTV) - West	451/ 1451 HD							
Home Shopping Network (HSN)	422/1422 HD							
Home Shopping Network (HSN 2)	423							
Hot Buy	367							
i24 News	223/1223 HD							
IFC	797/1797 HD							
Impact Network	574/1574 HD							

