

KreaTV 4.4 Release Note

Replaces: KreaTV 4.3

Overview

This document describes the KreaTV Software 4.4 release, its configurations and known problems in the current release.

New Features and Enhancements

- Whole Home DVR
- Timeshift on USB
- Continuous timeshift
- Append to existing recordings
- Improved MP4 support
- Matroska support in DLNA DMP/DMR
- Spotify client upgrade
- Support for iptables
- Application not Run as Root
- Basic internet surf in SVG
- HLS support
- HLS Encryption
- SecureMedia CA
- Low battery indication
- 4k sector HDD
- Live TV FCC Fast Channel Change
- Live TV RET Retransmission
- VOD RET Retransmission
- TR-069 basics and statistics,
- Ekioh SVG browser upgrade



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- Ready for Conax certification

New feature descriptions

The following features are new in KreaTV 4.4. They have not yet been deployed in an live environment before KreaTV 4.4 was launched for field test and might contain undiscovered issues. Therefore they are marked as release candidates.

Whole home DVR

Whole home DVR allows a STB to playback a stream recorded on a STB with internal HDD. The STB with internal HDD works as DLNA DMS, exposing the recordings to other STBs if the recordings are marked to be shared. Client STBs are able to browse and playback these recordings, taking the role of DLNA DMP. The supported playback actions are Play/Pause and Jump. Recordings are only shared in the local network.

External DLNA DMC devices (DMC application on tablet or smartphone) are allowed to browse the recordings on the DMS and direct another STB to playback the recordings. In this case, the playing STB acts as DLNA DMR (media renderer).

Recordings are tagged with a custom MIME type in the DMS CDS, and are sent in original CA format between DMS and DMP/DMR. Therefore recordings cannot be played on 3rd party DMP/DMR devices.

A license check scheme is utilized by DMS, DMP and DMR. The DMS can be enabled and disabled at run-time.

Whole Home DVR is supported for clear streams and with Verimatrix. DMS is not supported in VIP19x0-9 set-top-boxes due to memory limitation. Whole Home DVR can not be played as a Picture in Picture stream

Buildtime Configuration

```
# Configuration of DMS
kreatv-option-dlna::device=dms
kreatv-option-dlnamediaserver-plugin
kreatv-option-is-default::cfg.dlna.dms.enabled=TRUE
kreatv-option-license::file=<directory>/kreatv_dlna_dms.license
# Configuration of DMP
kreatv-option-dlna::device=dmp
kreatv-option-license::file=<directory>/kreatv_dlna_dmp.license
# Configuration of DMR
kreatv-option-dlna::device=dmr
kreatv-option-license::file=<directory>/kreatv_dlna_dmr.license
```



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Runtime Configuration

kreatv_dlna_dms.license
kreatv_dlna_dmp.license
kreatv_dlna_dmr.license

For more information

See the KreaTV SDK documentation for ToiDlnaService.

Timeshift on USB

USB timeshift provides the ability to use external USB storage for timeshift buffering for set-top boxes without available internal HDD storage.

Only USB 2.0 storage devices or greater should be used due to performance requirements. For the same reason USB hubs are not supported.

It is only possible to enable USB timeshift on storage devices formatted by KreaTV. An application has to use TOI to re-format the connected storage and mark it as USB Timeshift. If the USB storage device is unplugged during operation, timeshift will be automatically stopped and disabled. Subsequently, the storage device will be automatically enabled for USB Timeshift on device re-connection or STB start-up.

Timeshift on USB is limited to 30 minutes.

There is a large variety of USB-sticks on the market and the quality of the USB-sticks varies dramatically. The USB-stick performance is not only dependent on the maximum read-/write-speed. The consistency in data rate is also very important. Some memories have shown to have sufficient average data rate to support the feature but failed intermittently due to inconsistent actual data rate and low worst-case response

30 minutes of a 10 Mbit/s stream is 2.3 GB of data. Since flash memory devices should always have 30-40% of free space, which dictates a minimum USB memory stick size of 4GB.

Buildtime Configuration

kreatv-option-dvr::storage-handling-mode=external
kreatv-option-license::file=<directory>/kreatv_timeshift_external.license

Runtime Configuration

VAR_MEDIA_TIMESHIFTBUFFER_AVAILABILITY - indicates the USB timeshift feature readiness

kreatv_timeshift_external.license



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For more information

See the KreaTV SDK documentation for
ToiStorageDevice::reformat()
ToiStorageDevice::setEnabledFeatures()
ToiStorageDevicePartitionInfo::featureCapabilityMask
ToiStorageDevicePartitionInfo::enabledFeatureMask

Continuous timeshift

Continuous timeshift makes it possible to keep content in the timeshift buffer when closing the media player, e.g. when changing channel or when switching to a different video service. Instead of discarding the buffer, the buffering is stopped. To continue the buffering, StartTimeshiftBuffering() is used the same way as with normal timeshift. If the buffer contains old content, the new content will be appended at the end of the buffer. Even though the buffer may contain content from several channels, playback and trickplay works as expected.

The application used on top of the KreaTV has the choice of either keeping the buffer or emptying the same at any time, for ex at standby.

Buffer redirection

Buffer redirection is used to handle the special use-case for continuous timeshift when the user is playing from the timeshift buffer and the application need to change the buffering to a different URL. RedirectTimeshiftBuffering() stops the buffering on the previous URL and redirect the buffering to the new URL, without interfering with the timeshift playback.

Run-time configuration

CFG_MEDIA_TIMESHIFT_RECORDINGPOLICY = continuous

For more information

See the KreaTV SDK documentation for
ToiMediaPlayer::startTimeshiftBuffering()
ToiMediaPlayer::redirectTimeshiftBuffering()
ToiInformationService::CFG_MEDIA_TIMESHIFT_RECORDINGPOLICY

Append to existing recordings

Appending makes it possible to start a new recording at the end of an already existing asset with content. In the past, trying to record to a non-empty asset, would cause an exception, now IToiMediaRecorder::Open() accepts URL:s to assets with content. Software support for appending is a new feature in KreaTV 4.4 but it is possible to append to assets created with KreaTV 4.3 and newer.

No additional configuration is needed.

See ToiMediaRecorder::Open()



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See ToiMediaRecorder::Record()

Improved MP4 support

Support for the MP4 container format is improved. However, there are still two limitations: Any MOOV atom must occur close to the beginning of the stream and the URI must contain any of the strings ".mp4", "video/mp4" or "audio/mp4" (to allow KreaTV to increase buffer size to capture MOOV atom).

Buildtime Configuration

kreatv-option-mp4

Matroska support in DLNA DMP/DMR

The DLNA DMP/DMR supports Matroska container with H.264 video and AC-3 or HE-AAC audio. Jump (seek) and trickplay (fastforward/rewind) are not supported. Only play and pause are supported.

Buildtime Configuration

kreatv-option-matroska

Spotify upgrade

The library libspotify is upgraded to version 10.1.18.

The Spotify integration in KreaTV now writes a warning in the build log if the checksum of the libspotify file differs from the file that this KreaTV release was integrated and tested with. Spotify is not supported on VIP19x0-9 set-top-boxes due to memory limitations.

Support for iptables

Use of Internet services, like web surf and HLS, leads to increased exposure to intrusion and malicious attacks which calls for increased protection. Therefore this release introduces support for iptables.

With the iptables utility the Linux firewall can be configured with traffic filtering rules. The operator is free to define these rules and two default rules are included as examples;

1. Prevent the 'Ping of Death' or ICMP storm, realized by dropping all ICMP packets
2. Close some unnecessary service ports

Buildtime Configuration

kreatv-tool-iptables:rulesfile=<file>



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For more information

<http://en.wikipedia.org/wiki/Iptables>

Application not Run as Root

All applications are now run as a unique non-privileged user, i.e., not as root. Real and effective user id are the same. The real and effective group id are the same and also non-privileged. All applications are granted access to a sand-boxed area in persistent storage where they can manage their own files. A native application can use `::getenv("APP_STORAGE_PATH")` to access the persistent storage. Every time an application is started, it is granted read and write permissions to the same area.

Internet Surf

Internet Surf allows to load HTML pages within the SVG browser. This is made possible by the custom tag `<browser>` which can be inserted into the SVG page to render HTML content. The `<browser>` tag rendering is based on WebKit 531 with support for the HTML `<video>` tag but without support for TOI or other NPAPI plugins. The tag needs to be controlled by the parent SVG page for loading pages, handling content and so on. Internet surf is not supported on VIP19x0-9 set-top-boxes.

Internet web browsing typically calls for a different set of fonts than the IP-TV portal itself. For example, some internet web pages prefer to render fixed-width (monospace) content. These font licenses are not included in the KreaTV license.

Buildtime configuration

`kreatv-option-ekioh-browsertag::memory_limit=8192`

HLS support

KreaTV 4.4 has support for HLS (Http Live Streaming). A HLS playlist URL is recognized by the ".m3u8" suffix. When opened, such URLs will cause streamer pipeline to select the HLS source element. This element will handle the retrieval of chunks from the network and, if applicable, handle its decryption.

If the HLS playlist specifies streams with different bitrates, KreaTV will continuously measure the available network bandwidth and choose the best bitrate that the network can sustain. Both streams of pre-defined length and live streams (using sliding window) are supported.

Buildtime Configuration

`kreatv-option-hls`

HLS Encryption

HLS encryption allows playback of HLS content that is protected by a DRM system. The KreaTV DRM architecture allows concurrent conditional access systems to be used on a per-



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session basis. SecureMedia support is offered as a technical preview in KreaTV 4.4.

The application is responsible for setting the content type to LiveTV or VOD using the streamer parameter `HlsContentType`. It's also responsible for setting the DRM system type (`HlsDrmType`) to SecureMedia or None. The appropriate CA daemon will use this information together with the encryption key messages in the HLS playlist to obtain the keys from the CA server.

The HLS support has been implemented in the most standards-compliant way possible, to ensure interoperability with as many third party vendors as possible. It has been tested with Wowza, Qbrick, Apache with http-rate server, and with a variety of content including Apple test streams.

Buildtime Configuration

`kreatv-option-hls:memory_size=512`

For encryption:

`kreatv-option-ca-securemediaservice:authorization-method=request_service`

For more information

See the KreaTV SDK documentation for the HLS streamer source element.

SecureMedia CA

The platform support for SecureMedia CA has been extended to include multiple media sessions and to enable VOD/DVR/timeshift for SecureMedia content.

For encrypted VOD content, the platform manages keys pre-fetching in advance of playback if a VOD content ID is passed as a parameter in media player source URL. VOD content ID is generated when VOD content is encrypted offline. The application is responsible for collecting the ID of VOD contents.

For encrypted DVR and timeshift content the “automatic key fetching” feature is used -- the keys are automatically fetched when decoding ECM packets.

Buildtime Configuration

`kreatv-option-ca-securemedia:ecmclient,config=<file>`

4k sector HDD

Supporting “4k HDD sectors” allows us to format hard drives with the larger 4KB sector size. Larger sectors bring efficiency advantages because as the total size of drives increases, fewer sectors have to be used and less ECC data overall has to be written saving physical space.

To take advantage of 4k sectors, you need to reformat the HDD storage device. There are a few ways to do this:



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1. reformat an external HDD with `ToiStorageDevice::reformat()`;
2. reformat an internal HDD with `ToiStorageDevice::scheduleReformatOnNextReboot()`
3. If the internal HDD is not partitioned, then Storage Service will reformat it automatically on start up.

Live TV FCC Fast Channel Change

KreaTV 4.4 introduces support for Fast Channel Change for RTP multicast according to IETF RFC6285. There are two FCC modes supported. One is “standard” way that adheres to behaviour of RFC6285. Another is “enhanced” way that has slightly different behaviour than RFC6285. Main difference of “enhanced” way is that STB will only join multicast RTP after unicast burst ends and no “RTCP RAMS-T” will be sent out from STB during the entire burst phase. The “enhanced” way avoids the bandwidth overlap that happens in RFC6285 (paragraph 6.3). Note that the “enhanced” way may result in that the STB fails to sync up unicast burst and multicast stream if FCC server is not aware of the behaviour of STB client, which will cause video disturbance. Regarding how to configure FCC modes, please refer to documentation of “TeiFccChannelService”.

The feature is interoperability tested with Edgware Orbit SW, and “enhanced” way is supported well starting from orbit v1.14.4.

Buildtime Configuration

`kreatv-option-streamclients:basicfcc:<fcc_config.xml>`

`kreatv-option-npapi-fccconfig`

Note that “`kreatv-option-npapi-fccconfig`” is optional and is used for setup configuration for FCC on run-time through TOI.

Live TV RET Retransmission

KreaTV 4.4 introduces support for Retransmission for RTP multicast according to RFC4588 and RFC4585. Currently only feedback message with FMT type 1 (Picture Loss Indication) and PT type RTPFB (Transport layer FB message) is supported. Note that this feature can be combined with Live TV FCC and also functions to unicast stream. Regarding how to configure Live TV RET, please refer to documentation of “TeiFccChannelService”.

The feature is interoperability tested with Edgware Orbit SW. There is a known limitation for Orbit SW that version 1.14.7 do not support RET for unicast stream during FCC, and version 1.14.29 support RET for unicast stream but it do not function properly (i.e. do not feedback retransmission packets) after unicast burst ends for about 15 seconds.

Buildtime Configuration

`kreatv-option-streamclients:basicfcc:<fcc_config.xml>`

`kreatv-option-npapi-fccconfig`

Note that “`kreatv-option-npapi-fccconfig`” is optional and is used for setup configuration for FCC on run-time through TOI.



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VOD RET Retransmission

KreaTV 4.4 introduces support for Retransmission for RTP unicast according to RFC4588 and RFC4585. Note that the retransmission packets are supposed to be transferred on RTP channel instead of RTCP channel which is the way for LiveTV RET. The feature is automatically enabled per RTSP session if VOD server indicated "AVPF" Transport profile support in "SETUP" response message.

The feature is interoperability tested with Edgeware Orbit SW.

Buildtime Configuration

kreatv-option-streamclients:rtsp

TR-069 support

KreaTV 4.4 introduces support for remote management and statistics via TR-069, *CPE WAN Management Protocol* (CWMP).

- Protocol Compliance
TR069 (Issue 1 Amendment 2, December 2007) http://www.broadband-forum.org/technical/download/TR-069_Amendment-2.pdf
- Functional Components
 - * Auto-configuration and dynamic service provisioning
 - * Software/firmware image management (limitations)
 - * Status and performance monitoring
 - * Diagnostics
- Supported CPE RPC methods
 - o GetRPCMethods
 - o SetParameterValues
 - o GetParameterValues
 - o GetParameterNames
 - o SetParameterAttributes
 - o GetParameterAttributes
 - o AddObject
 - o DeleteObject
 - o Reboot
 - o Download (limitations)
 - o ScheduleInform
 - o FactoryReset
- Supported ACS RPC methods
 - o Inform
 - o TransferComplete (limitations)
 - o RequestDownload (limitations)
- Supported data model
 - o TR106 (Amendment 1, November 2006) http://www.broadband-forum.org/technical/download/TR-106_Amendment-1.pdf



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- o TR135 (Issue 1, December 2007) <http://www.broadband-forum.org/technical/download/TR-135.pdf>
- o Supported profiles:
 - Device:1.0(Baseline:1, GatewayInfo:1, Time:1, LAN:1),
 - STBService:1.0(Baseline:1, BasicPerfMon:1 except for *.RTPStats.* and *.VideoResponseStats.*)
- Supported use cases
 - o Remote reboot
 - o Firmware(DBL) upgrading (limitations)
 - o Device log (30K circular buffer)
 - o IP packets statistics
 - o MPEG2TS stream statistics
 - o Media player/recorder status
 - o SSL certificate, HTTP basic/digest authentication
 - o Passive/active value change notification
 - o Connection Requestion by ACS within LAN
 - o Device Gateway Association (TR-069 Annex F, G former TR111)

Third party software upgrades

Many third party software components have been upgraded to newer versions for better functionality and performance. Notably the Ekioh SVG browser is upgraded and SVG performance is improved significantly.. Third party software versions can be seen from the OpenSource Notice.

Availability

KreaTV 4.4 has been developed, tested and verified in the KreaTV 4.4 generic environment. System verification is done using browser based portal applications. KreaTV 4.4 can be made available upon request to other parties pending approval from Product Management for purposes such as integration, lab-testing or other purposes if mutually agreed.

Definition of severity for bugs

These definitions are based on the quality assurance standard TL 9000.



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Bug issue severity	Bug definition
Blocker	<p>Conditions that severely affect the primary functionality of the product and because of the business impact to the customer requires non-stop immediate corrective action, regardless of time of day or day of the week as viewed by a customer on discussion with the organization such as:</p> <ul style="list-style-type: none"> a) Product inoperability (total or partial outage). b) A reduction in the capacity capability, that is, traffic/data handling capability, such that expected loads cannot be handled. c) Any loss of emergency capability (for example, emergency 911 calls). d) Safety hazard or risk of security breach.
Major	<p>Product is usable, but a condition exists that seriously degrades the product operation, maintenance or administration, etc., and requires attention during pre-defined standard hours to resolve the situation. The urgency is less than in blocking situations because of a lesser immediate or impending effect on problem performance, customers and the customer's operation and revenue such as:</p> <ul style="list-style-type: none"> a) Reduction in product's capacity (but still able to handle the expected load). b) Any loss of administrative or maintenance visibility of the product and/or diagnostic capability. c) Repeated degradation of an essential component or function. d) Degradation of the product's ability to provide any required notification of malfunction.
Minor	Other problems of a lesser severity than blocker or major such as conditions that have little or no impairment on the function of the system.

Resolved Issues

Below tables present the number and title of the issues in MMI internal issue database. The information presented is kept to the minimum in order to simplify the presentation of the same. In order to get more information regarding the specific issue please do not hesitate to contact Motorola.

Issue or CR No.	Severity	Software Version	Description
14958	Major	4.4.popeye.1	Memory leak in Spotify when playing/trick playing in Spotify
15413	Major	4.4.popeye.1	XMLHttpRequests fail when port number is used in URL
<u>15490</u>	Minor	4.4.popeye.1	Flickering/bouncing PiG graphics on HDMI when watching some VoD assets
15837	Major	4.4.popeye.1	Error in PdtAspectRatioConverter, TToInvalidPreconditionException, after setting video to fullscreen
15932	Major	4.4.popeye.1	DLNA: Incorrect representation of some JPEG_LRG certification content from WMP11.



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Issue or CR No.	Severity	Software Version	Description
<u>16452</u>	Minor	4.4.popeye.1	DLNA: Seek functionality is not working properly for some content.
<u>17054</u>	Minor	4.4.popeye.1	STB crashes if quickly plug and unplug HDMI cable
<u>17178</u>	Minor	4.4.popeye.1	Videooutput: no video after HDMI hotplug for several times
<u>17239</u>	Minor	4.4.popeye.1	Segment Display intensity changes to incorrect during startup.
<u>17321</u>	Major	4.4.popeye.1	DVR: FFW/FRW,Jump/Pause+Play - one frame is visible for a long time on low bitrate (~1MBPS) MPEG2 stream
<u>17560</u>	Minor	4.4.popeye.1	DLNA: Audio: Fluttering sound after track change
<u>17741</u>	Major	4.4.popeye.1	Edgware VOD: Stream freezes and audio is muted after jump
<u>17743</u>	Major	4.4.popeye.1	No audio on audio only DVB-C streams
<u>17757</u>	Major	4.4.popeye.1	Verimatrix + VoD:Edgware Reflex : Unable to decode certain Verimatrix streams
<u>17782</u>	Major	4.4.popeye.1	Macroblocking during ffw of a recording asset
<u>17790</u>	Major	4.4.popeye.1	Sometimes subtitles activation/deactivation doesn't work
20017	Major	4.4.firebrick.5	DLNA: Playing of shared asset in local DLNA portal makes box crash
17783	Minor	4.4.firebrick.5	HLS: Audio-only streams breaks video playback
21370	Major	4.4.firebrick.5	Time zone can't be synchronized through DHCP server
10982	Major	4.4.firebrick.5	Persistent Cookies
21850	Major	4.4.firebrick.5	TFlashFsAdapter can be used to gain access to STB
21889	Major	4.4.firebrick.5	Halserver intermittently crashes while running DVR/timeshift tests
21789	Major	4.4.firebrick.5	DLNA documentation contains internal references
22184	Blocker	4.4.firebrick.5	DVR: Streamer is terminated by SIGSEGV when recording two streams
22400	Blocker	4.4.firebrick.5	DVR: Can not play ongoing recording
22537	Major	4.4.firebrick.5	No Way to specify COD Download Path
19530	Major	4.4.firebrick.5	No SPS received after BufferOverflow



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Issue or CR No.	Severity	Software Version	Description
22594	Blocker	4.4.firebrick.5	HLS - Streamer crashed when encountering 503 error when STB reloading the playlist
22202	Blocker	4.4.firebrick.5	Mediamanager: STB crashed after mediamanager was terminated with SIGABRT(6)
22661	Major	4.4.firebrick.5	[FCC] Zap time is too long for FCC against Verimatrix encrypted stream
22458	Major	4.4.firebrick.5	The STB playback HLS adaptive streaming is not stable
22837	Major	4.4.firebrick.5	[FCC] It takes up to 6 seconds for the stream to become stable
21943	Blocker	4.4.firebrick.5	DLNA DMS object properties are not filtered in
22254	Blocker	4.4.firebrick.5	DLNA CDS property mapping doesn't work
22742	Major	4.4.firebrick.5	Wrong paces returned when playing a rtsp stream
23041	Major	4.4.firebrick.5	[FCC]: Video freeze for a short while when switch to a fcc channel with ret disabled
22180	Blocker	4.4.firebrick.5	Streamer was terminated by SIGABRT when watch FCC channel
22985	Major	4.4.firebrick.5	Picture not load under specific condition
20244	Major	4.4.firebrick.5	[CoD]The duration of CoD is displayed abnormally
21847	Major	4.4.firebrick.5	[CoD]FW throws exception when tricky playback CoD
<u>12937</u>	Minor	4.4.firebrick.6	[Video output]: setDisplayInfo: changes preferred video mode
14842	Major	4.4.firebrick.6	Ipc timeout in streamer during constant operation test
<u>15822</u>	Minor	4.4.firebrick.6	Subtitles not removed from screen when deactivated.
16324	Major	4.4.firebrick.6	Verimatrix channel of audio only stream plays several seconds of jitter sound at the beginning
16325	Major	4.4.firebrick.6	Browser: webkit css/animation text test cases fail
<u>16511</u>	Minor	4.4.firebrick.6	PiP: SIF Video on the Main screen freezes occasionally
<u>16754</u>	Minor	4.4.firebrick.6	Short beep is heard at the time of jump in timeshift buffer
16922	Minor	4.4.firebrick.6	DVR: No Audio/Video within 4 sec when a playback of an asset was started right after it was created
<u>16956</u>	Major	4.4.firebrick.6	Audio slow after channel change
17560	Major	4.4.firebrick.6	DLNA: Audio: Fluttering sound after track change



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Issue or CR No.	Severity	Software Version	Description
17788	Minor	4.4.firebrick.6	Edgeware: HD VoD trick play -> play takes up to 20 seconds before playing smooth
17804	Minor	4.4.firebrick.6	PiP: Two PiP video are displayed and garbage remains when moving the PiP video on SCART and HDMI with ShareOutputBufferEnabled (
19360	Major	4.4.firebrick.6	Chase playback doesn't work and crash after leave chase playback if local-re-encrypted is enabled
19430	Major	4.4.firebrick.6	HLS, sometimes stuttering/frozen video when decreasing the transfer rate.
19451	Minor	4.4.firebrick.6	Inconsistent behaviour for SCART loop through mode after factory reset
19482	Major	4.4.firebrick.6	Bad graphics on 19x0-9 boxes
19537	Major	4.4.firebrick.6	VOD WTV: kms1511, with PMT changes, has video freezes and no sound
19736	-	4.4.firebrick.6	VIP1853 gets stuck in the FW menu during booting
19969	Minor	4.4.firebrick.6	CPU more than 90% on VIP1960-9 when rec 2 streams of 10Mbps/s and view a third stream
20075	Major	4.4.firebrick.6	PERF: Timeshift trickplay endurance test makes box freeze or crash
20183	Major	4.4.firebrick.6	DOC: NTP documentation needs to be improved
20296	Major	4.4.firebrick.6	Widget can't be installed in svg portal
20302	Major	4.4.firebrick.6	Web: Websurf portal can not start a background stream
20310	Major	4.4.firebrick.6	Media player session already in effect
20389	Major	4.4.firebrick.6	DVR+Verimatrix. Periodically, rewind freezes on 1-2 values when playing asset recorded from specific stream.
20461	Major	4.4.firebrick.6	mediamanager state is not updated when source element reports STATE_CLOSE during Open.
20487	Major	4.4.firebrick.6	DLNA, streamer terminated by SIGSEGV after playfromposition in LPCM files.
20522	Major	4.4.firebrick.6	HLS: Jump forward in Qbrick stream doesn't work as expected.
20543	Major	4.4.firebrick.6	DOM operations are slower in 4.4. than in previous releases (Hixie DOM).
20660	Major	4.4.firebrick.6	spotify:can not remove the playlist created by the box



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Issue or CR No.	Severity	Software Version	Description
23530	Major	4.4.firebrick.6	tc_kgfxmark_interface.py fails due to color mismatch in blitter tests
23546	Blocker	4.4.firebrick.6	Box crash when provoking it by recording multiple times
23382	Blocker	4.4.firebrick.6	screen flashes, stb get out of control when timeshift on USB with HD stream on vip1910-9
23416	Blocker	4.4.firebrick.6	STB can not boot up with an improved hdd and a usb stick
23472	Blocker	4.4.firebrick.6	Crash (Core Dump) during dvr longtime test
21330	Blocker	4.4.firebrick.6	VIP1003 doesn't auto reboot after updating FW from 3.12.1 to 3.15.1
21625	Blocker	4.4.firebrick.6	Freezes at channel changes in timeshift buffer
21976	Major	4.4.firebrick.6	Various issues with netconfig
22077	Major	4.4.firebrick.6	Empty asset when upgrading to 4.4.0.14_pre
23014	Major	4.4.firebrick.6	[COD]: The duration of downloaded asset is displayed incorrectly
20129	Major	4.4.firebrick.6	[continuous timeshift] REW don't start from timeshift buffer end position after zap
23413	Major	4.4.firebrick.6	timeshift portal: no "PositionEnd" appears in Playback info Window
23419	Major	4.4.firebrick.6	Box reboots after "procman(418) FAIL: HAL process 419 died: SYSTEM UNSTABLE, shutting down"
21225	Major	4.4.firebrick.6	Assets lost after sw degradation 4.4 -> 4.3
23436	Major	4.4.firebrick.6	VIP1910+USB: STB reboots after long time zapping timeshift buffer
23446	Major	4.4.firebrick.6	Cannot view detailed information about available bookings
23007	Minor	4.4.firebrick.6	[Verimatrix]: Decoding has failed when play the encrypted stream kms0013
23012	Minor	4.4.firebrick.6	[COD]: The part near the end of the asset can still be played even after reach the position end
23685	Major	4.4.firebrick.7	Potential audio and video disturbances while recording and viewing the same VMX encrypted channel
24079	Minor	4.4.firebrick.7	Assertion 'px != 0' when starting recording
24008	Major	4.4.firebrick.7	Mediamanager might freeze during bootup if encountering an unmountable filesystem



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Issue or CR No.	Severity	Software Version	Description
16974	Major	4.4.firebrick.7	System crashed with:assertion failed in TIndexParserBase::SetBounds()
24015	Minor	4.4.firebrick.7	Unhelpful WebKit XHR error messages
22553	Minor	4.4.firebrick.7	DVR: Can not trickplay some 4.2 assets in 4.4
23030	Minor	4.4.firebrick.7	URL Parsing updates required to support URL's with multiple consecutive dashes
24294	Major	4.4.firebrick.7	null ptr dereferenced after calling InfoInstance::CreateIndexParser
24413	Minor	4.4.firebrick.7	Timestamps not growing between video intervals
24167	Minor	4.4.firebrick.7	Assertion in virtual void DvrAsset::TInfoInstance::EndRecording(): `Recording' failed
22603	Minor	4.4.firebrick.7	Improved cleanup in CachedResponse objects which might stay in memory if the client was removed before cache removal
24534	Minor	4.4.firebrick.7	Timeshift buffer temporarily disappears sometimes using continuous timeshift
24535	Major	4.4.firebrick.7	DVR + Timeshift can lead to crashes if quickly starting/stopping on 2 channels
24667	Minor	4.4.firebrick.7	DHCPNAK reply to DHCPREQUEST does not deconfigure interface
24729	Major	4.4.firebrick.7	SecureMedia: Backwards compatibility problems in registration and playback when using old version of Encryptonite System (<2.1.0)

Unresolved Issues

Issue or CR No.	Severity	Software Version	Description
16085	Major	4.3.0.11	Longtime zapping with Verimatrix indicates system memory leaks
16163	Major	4.3.0.11	ekioh-webkit sometimes becomes totally unresponsive when stressing the STB



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Issue or CR No.	Severity	Software Version	Description
16554	Minor	4.4.0.11	Bitband: Under certain circumstances, during VOD trickplay the streamer crashes when MediaPlayer state changes to fastforward/rewind
<u>16640</u>	Minor	4.3.0.11	DVR, picture jumping back and forth at some positions when rewinding in asset.
<u>16930</u>	Minor	4.3.0.11	Video halts for a while the first time you do pause/play to enter the timeshift buffer
18711	Major	4.4.popeye.1	DLNA: (Allegro) Resume of the playback of WMV contents results in streamer crash in specific case
19898	Minor	4.4.popeye.1	DHCP user class is not handled by STB
20247	Major	4.4.firebrick.5	TR069: Platform reboot loop with "tr069man was terminated by SIGSEGV (11) due to no space left on /flash"
20283	Major	4.4.popeye.1	STB rebooted due to Out of memory during kms1624 playback over the weekend.
21587	Major	4.4.firebrick.5	Upgrade FW DBL from bootimage failed
22391	Major	4.4.firebrick.5	DVR: Subtitle of a stream being recorded and played has timing and refresh problems
22412	Major	4.4.firebrick.5	Verimatrix + Continuous timeshift: Cannot sometimes play second video interval
23386	Major	4.4.firebrick.5	Playback of asset is sometimes frozen on NW disconnect
24111	Major	4.4.firebrick.6	STB sometimes doesn't register presses from the remote control with NEC protocol

Compatibility

Hardware	Firmware /DBL	Firmware /RBL	Comment
VIP19x0-9	3.15	2.6	Running firmware/DBL version 3.15 is strongly recommended. Running firmware/RBL version 2.6 or greater is recommended, older versions can cause problems.
VIP19x3/ VIP1003	3.15	2.6	Running firmware/DBL version 3.15 is strongly recommended. Running firmware/RBL version 2.6 or greater is recommended, older versions can cause problems.
VIP1853	3.14	2.6	



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CA System	Type	Platforms
Verimatrix v 2.3.1 and 3.0	HW Accelerated AES	VIP19x0-9, VIP19x3, VIP1003, VIP1853
SecureMedia	Encryptonite ESAM 2.1	VIP19x0-9, VIP19x3, VIP1003, VIP1853

System	Description	Standard/ Optional
Encoders		
Motorola Modulus	SE-4100 series, SE-5100 series, SE-6000 series	S
Tandberg	Openstream 5.1, Both for redirecting to IP VOD and to DVB-C VOD	S

VIP1853 HDD

The VIP1853 is a set-top box with a slot for inserting a hard disk. The VIP1853 will only function with Motorola provided hard disks and uses a bootimage that is specific to VIP1853. VIP 1853 can use the same bootimage as all other 1xx3 boxes.

External Interfaces and Protocols

Interface	Version	Supported by	Added in Version
KreaTV TOI/C++	2.1.39b	KreaTV Application Platform	4.4
KreaTV TOI/JS	2.1.39b	KreaTV Portal Application	4.4

Tool Chain

Architecture	Tool Chain Version
VIP19x0-9 (ST7109), VIP1003/VIP19x3/VIP1853 (ST7105)	2.5.0



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Server Versions

Server	Version
Infocast server	3.1

Migration from KreaTV 3.x

The API TOI has been redefined in version 2.0 with more similarity between the JavaScript and C++ interfaces. Old portals need to be ported to the new interfaces. The changes include changes to information object names. See the KreaTV Documentation for a description of the differences between TOI1 and TOI2.

uClibc is now used to save memory. This change requires all binaries to be rebuilt with the new tool chain. This also changes the format of time zone settings.

The DVR file format is different than in 3.x to improve performance, but old recordings are automatically migrated to the new meta data format, and content can still be played, if the IIP kreatv-option-assetmap and a asset mapping file is included in the build. Depending on the amount of assets the re-mapping of assets can take some time which is something the end user needs to be aware of.

The EK_PLUGIN_DIR environment variable should not be set in the configuration file when building a boot image. Plug-ins should be located in the "/usr/browser/plugins" directory.

The basic A/V and subtitling user settings are automatically migrated from 3.x settings to 4.x settings the first time KreaTV 4.2 or later is run. When the migration is complete, the information object "cfg.migration.v3_x_done" is set to "TRUE". The 3.x settings are not changed by the migration, to be able to downgrade to 3.x without losing the user settings. To trigger the migration to run again at the next reboot, you can set this information object to "FALSE".

HDMI

HDMI-compliant behavior has now been implemented within KreaTV, meaning that it is no longer necessary for portals/applications to handle the cases where the user changes the Display (from TV to Projector, for example), whenever the new display does not support the current resolution or color-space.

Instead, KreaTV will automatically switch to the preferred video mode in those cases. The portal/application will still be receiving events when a new display is plugged in, only with the difference that KreaTV will first ensure that video is visible on the Display.

The only real interface change is the new:

@optional TTtoIColorSpaceSequence SupportedColorSpaces found in ITtoIVideoOutputConfiguration

The rest of the changes are in the documentation of expected behavior, please see:



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IToiVideoOutputConfiguration:
* TToiDisplayInfo (SupportedColorSpaces)

IToiVideoOutputConfigurationSession:
* Main interface description
* ReleaseInstance()

IToiVideoOutputConfigurationObserver:
* OnDisplayChanged()

This functionality has been tested and certified on ST-chipsets.

Recommended H264 Encoder Settings

We recommend these settings for H264 stream encoders to get the best possible performance on Motorola IP-STBs:

- 2 IDR frames/second
- CPB = max 1700 ms
- Random Access Indicators must be enabled to support winding for recorded content.

SDK example kernel_module

SDK example kernel drivers does not work to build correctly, however the Kernel drivers themselves are working fine.

Improved way of handling volume

In order to normalize audio output, volume changing functionality was removed from the digital outputs in KreaTV 4.2 and following releases. This affects all sorts of multi-channel audio types on digital output. If volume is not set correctly in the portal, HDMI volume will not be possible to change correctly. More information of how to set volume correctly can be found in SDK documentation.



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Licences

In KreaTV 4.2 the concept of licenses was introduced. These are not distributed in the standard software kits but are available separately as they are customer and build specific. Licenses bundled to hardware might be included in the standard software kit in future releases of KreaTV 4.4.

The following licenses exist:

license to disable cgmsa.

license to enable rovi, replaces kreatv-option-macrovision

license to decode and downmix aac. Replaces aacdownmix.

license to decode and downmix ac3. Replaces ac3downmix.

license to decode and downmix eac3.

license to decode and downmix mp3.

license to decode h264 video.

license to decode mpeg2 video.

license to decode wmv3 (aka windows media 9)

license for using timeshift on USB and continuous timeshift
kreatv_timeshift_external.license

license for DMS used Whole Home DVR kreatv_dlna_dms.license

license for DMP used Whole Home DVR kreatv_dlna_dmp.license

license for DMR used Whole Home DVR kreatv_dlna_dmr.license

WebKit

Default User Agent for WebKit is KreaTVWebKit/531 (Motorola STB; Linux).

Error recovery IFrame only mode

Bootimage config parameter kreatv-option-env-variables::KREATV_ERROR_RECOVERY_I_FRAME_ONLY_MODE is obsolete and removed. It is generally set to high now, and this parameter has no effect.

Open Source Software Attribution

The KreaTV SDK includes a number of Open Source Software components. Use of OSS comes with obligations, of which a common one is the obligation to show attribution information to the end user. This attribution information is usually an aggregate of license texts and explicit acknowledgements. It also informs end



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users of where to write to request source code for OSS that has such source code redistribution obligations.

When a boot image is created using a recent KreaTV SDK release, the build system will automatically assemble all attribution information for those IIPs enabled in the configuration file. The final boot image will include a file in its file system, `/usr/share/license/opensource/notice`, generated to one of the formats HTML, SVG or plain text. The end user must be able to navigate to see the contents of this file (the attribution information). It should be reachable within a few steps from the top level screen / main menu.

For browser specific examples of implementation, see the chapter “Open Source Notice” in the KreaTV Documentation, under the heading “The KreaTV TV Software” and the SVG and HTML browser sections.

Limitations

- White list URL, and proxy list information objects must be set for the Webkit and SVG applications to start correctly.
These objects can be sent out using the KreaTV Infocast Server.

Getting Help

To get assistance with your Motorola Mobility product or solution, or to access learning materials, use one of the following channels:

Technical Assistance Center (TAC) provides access to technicians 24 hours a day, 7 days a week for all products. Contact the TAC at 888-944-HELP (888-944-4357) or dial direct at 847-725-4011.

Motorola Mobility Online (MOL) provides technical documentation and low-priority issue creation and tracking at <http://mobilityonline.motorola.com>. (PON and BSR users see Extranet Support below.)

DigitalCM provides access to software downloads and release notes at <http://digitalcm.motorola.com>. (PON users see Extranet Support below.)

Learning Portal provides self-paced product training and course descriptions of instructor-led training classes at <http://www.motorolatraining.com>. In many cases training can be given at your location.

Extranet Support provides access to technical publications for PON (FTTx) users at <http://compass.motorola.com/go/ftth>, and software downloads and technical publications for BSR users at <http://bsr.motorola.com>.



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