

KeyTrunk Software Release Notes

Release 6.0.0

Linux Version

Multichassis,
VoIP Streaming and Media Processing

January 2007

Revision 6.0.0 - January 2007

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INTRODUCTION

This document defines the Kallastra KeyTrunk software release version 6.0.0 with multichassis, VoIP and Media support.

Documentation may be found under the `<KEYTRUNK_ROOT>\doc` directory.

Reference	Description
ka4102ug5300-600.pdf	KeyTrunk User Guide for Windows
ka4102ug5100-600.pdf	KeyTrunk User Guide for Linux
ka4101as5600-600.pdf	KeyTrunk API Specification
ka4103as5000-600.pdf	Kallastra Hot Swap API
ka4101rc5600-600.html	Kallastra return codes

WHAT'S NEW IN THIS RELEASE

KTR6.0.0

Added Features

- Added new statistics to the report the state of the echo canceller. Please refer to the KTApiMediaGetStats() function in the KeyTrunk API specification
- Added support of Red Hat Enterprise Linux 4 Update 4.

Modified Items

- Removed support of Red Hat Linux 7.3 and Red Hat Linux Enterprise 3.

Fixed Issues

- None

HISTORY

KTR5.1.2 (Patch release)

Added Features

- None

Modified Items

- None

Fixed Issues

- PR-4844 - Calling `KTApiMediaModifyEchoParms()` to disable the tone disabler generates error code `0x47030602`. The fix proposed in KTR5.1.1 covers a scenario where the media is bound after a modify while the new fix also cover a scenario where the media is modified after any bindings.

KTR5.1.1 (Patch release)

Added Features

- None

Modified Items

- None

Fixed Issues

- PR-4844 - Calling `KTApiMediaModifyEchoParms()` to disable the tone disabler generates error code `0x47030602`.

KTR5.1.0

Added Features

- None

Modified Items

- Added new parameter fEnableIdleCodeDetection (see structure tKTAPI_ECHO_ADVANCED_PARMS in the KeyTrunk API specification) to Enable/Disable the IDLE code detector for the ALC, HLC and NLE level control controllers of media channel Advanced Echo Cancellation Parameters
- Added new parameter fEnableIdleCodeDetection (see structure tKTAPI_ECHO_ADVANCED_PARMS in the KeyTrunk API specification) to Enable/Disable the IDLE code detector for the ALC, HLC and NLE level control controllers of media channel Advanced Echo Cancellation Parameters.
- Modified the function KTApiMediaModifyEcho() to allow enabling/disabling of the ANR function when the media object is created with the function KTApiConfAddParticipant().

Fixed Issues

- None

KTR5.0.2

Added Features

- None

Modified Items

- None

Fixed Issues

- PR-4608 : Getting toggling events Ethernet trunk UNDERRUN/OVERRUN events every 7 seconds between unsynchronized chassis

KTR5.0.1

Added Features

- None

Modified Items

- None

Fixed Issues

- PR-4607 : CPU usage can reach 100% when the event generation mask is set to ALL event

KTR5.0.0

Added Features

- PR-3561 : Added support of double talk behavior
- PR-4298: Added new echo cancellation mode optimized for speech recognition engines.
- Added a function to dump media device channel information : KTApiMediaDumpOct6100Data(). Here is an example that illustrate how to use this function.

```
tKTAPI_MEDIA_DUMP_OCT6100_PARMS DumpParms;  
  
...  
  
KTApiMediaDumpOct6100DataDef( &DumpParms );  
  
DumpParms.hMedia = hMedia; /* Handle of the media for wich we wan to get a dump. */  
  
DumpParms.pszDumpFileName = "mydumpfile.bin";  
  
Result = KTApiMediaDumpOct6100Data( pBoardInstance, &DumpParms );  
  
...
```

-

Modified Items

- PR-4244: ALC and ANR features where be removed from the RIN-->ROUT path.
- PR-4297: Media Tone Disabler renables NLP processor when fax transmission contains silence period longer than 252ms. The NLP processing has been modified to successfully transmit fax even if fax silence period are longer than expected.

Fixed Issues

- PR-3919 : Calling KTApiBoardListGet() function generate a blue screen after +/-16,000 iterations
- PR-3960 : Ethernet trunks state changes to DISCONNECTED over time.
- PR-3964 : KTApiBoardPoll() Generate error 0x47060001 when the playout function are used under Red Hat Linux 9.0 and using cPCI boards.
- PR-3982 : ktboard.exe utility program generates errors 0x47030006, 0x4700005 and 0x47010003
- PR-4299: Can't rebuild Linux Driver for SMP configuration.

KTR4.1.0 – Patch Release

Added Features

- None

Modified Items

- None

Fixed Issues

- PR3798 : Trunk Compatibility issue between KTR2.2.7 and KTR4.0.0.2. The application needs to specify the trunk protocol version when the board is opened. Please refer to API specification for more details.

KTR4.0.0.3 – Patch Release

Added Features

- None

Modified Items

- None

Fixed Issues

- PR3713: FAX contains errors when using the RTP Fax G711 fallback mode and tone clamping is enabled.

KTR4.0.0.2 – Patch Release

Added Features

- None

Modified Items

- None

Fixed Issues

- PR3637: With some Ethernet switches, the KTAPI may generates constantly Ethernet redundancy events (cKTAPI_EVENT_ID_ETH_PORT_FRONT_ACTIVE toggling ON and OFF) for the secondary Ethernet port.

- PR3685: KTAPl generates an exception when the application is opening the second board under Window NT4.0.

KTR4.0.0

Added Features

- Hot swap support. Requires third party hot swap middleware such as Pigeon Point Hot Swap Kit.
- RTP connection CODEC automatic fallback to G711 when the a FAX or a Modem tone is detected.
- Board watchdog function to reset the board when no control application is associated with the board.

Modified Items

- Node discovery functions now work when the IP stack is enabled.
- PR-3186 - Reduced stack usage (below 10KB) of KTAplBoardGetInstanceSize, KTAplBoardAllocateInstance and KTAplBoardOpen functions.

Fixed Issues

- PR-XXXX – KTAPl may or can generate an error trace for “Ethernet Encapsulation Mismatches”.
- PR-2511 : KTAplMediaChannelClose unbinds the connection even when fForce is set to FALSE
- PR-2520 : KTAplMediaChannelPlayoutListAdd : low level error messages are returned
- PR-2521 : KTAplMediaBufferPlayoutUnload : low level error message is returned
- PR-2522: Noise in conference when binding a source object to a conference participant.
- PR-2622 : fFrMemOutOfBandwidth error log when 2 channels or less are active.
- PR-2624: This release does not support KT315-MC (cPCI 2016 channels) hardware revision 2. Refers to user guide to identify hardware revision.
- PR-3084 - IPTrunk state toggle between CONNECTED and DISCONNECTED when 255 trunks are opened. The counter ulSampleLostCount increment constantly.
- PR-3123 - Can't open board due to error 0x7030e1.
- PR-3138 - conf_rt/conf_tdm sample applications fail to start due to error 0x47000c0a.
- PR-3197 - Tone relay may not send Tone relay events when closing connections.

- PR-3200 - The board continues to write data on the TDM bus even if the function `KTApiBoardClose` has been called.
- PR-3273 - Error in the `rtpcnct_echo` sample code.
- PR-3486 - ADPCM VAD does not work when frames per packet is 200 or 240.

KTP3.2.2

Added Features

- Added playout completion event notifications.
- Added Advanced Voice Quality Enhancement parameters.
- Added support to configure the RTP CN packets refresh rate per board. It is also possible to disable or enable CN packets transmission per RTP connection.
- Added ***KTApiResultGetDescription*** function and console program `ktresult` to retrieve the symbolic name and the description for a given KTAPI result.

Modified Items

- Modified playout finite states machine.
- Modified conference bridge functions.

Fixed Issues

- PR-2884: Ethernet trunks toggle between connected and disconnected states when `ulKeepAliveTimeout` is set to 500.
- PR-2916: KTAPI may generate the following error log: "KTAPI: KHWDEVICE_ECO.C(2505) Oct6100BufferPlayoutAdd() 0x10500f"
- PR-2919: Under echo cancellation, the mode `cKTAPI_ECHO_COMFORT_NOISE_OFF` with `fEchoToneDisablerEnabled=ON` removes everything.
- PR-2921: `KTApiMediaStopPlayout()` return `cOCT6100_ERR_BUFFER_PLAYOUT_NOT_STARTED (0x105013)` when stop event already received.
- PR-2924: Media channel player state stuck in `STOPPING` state after `KTApiMediaStopPlayout()` with `fStopImmediately = FALSE`.
- PR2932 - The `aulTxPacketsCnt[0]` and `aulRxPacketsCnt[0]` are not accurate over time.
- PR2997: Trunk Channel can contain irritating noise during the first 500ms to 2000ms after the bind operation.
- PR3030: The board is not reset by the `KTApiBoardOpen` function.

KTR3.1.1

Added Features

- NAT learning mode for RTP connections.
- Asynchronous event notifications to reports board errors.
- Ethernet Failover mode available only with cPCI board with rear I/O.

Modified Items

- None

Fixed Issues

- PR-2891 : KTNET log errors are displayed during KTApiBoardClose.
- PR-2884: Ethernet trunks toggle between connected and disconnected states when ulKeepAliveTimeout is set to 500.
- PR-2904 : KTAPI returns error code 0x0070800d when the program attempts to open the 64th time slot on K513-IP-MED revision 1 board.
- PR-2905 : The 4th RTP connection open call returns 0x7db000 if VAD is enabled in the rtcnct_adpcm sample code.
- PR-2908: KTAPI may generate the following error log: "KTAPI: KHWDEVICE_PHY.C(0251) KTPHyLoopBack() 0x4703001a."
- PR-2919: Under echo cancellation, the mode cKTAPI_ECHO_COMFORT_NOISE_OFF with fEchoToneDisablerEnabled=ON removes everything.

KTPR3.1.0

Added Features

- Added new KTApiBoardAllocateInstance and KTApiBoardReleaseInstance functions. The user application shall use these new functions to allocate and release the board instance memory in order to allow Kallastra diagnostic tools to have access to the board instance. The samples codes have been updated to use these new functions.
- Added support for hardware revision 3 of the following products: KT301-MC, KT301, MC-SCB, KT302-MC, KT303-MC, KT500-IP-MED, KT501-IP-MED, KT502-IP-MED, KT503-IP-MED.
- Inbound tone relay events RFC2833.
- Basic Comfort Noise Generation on RTP connections. Generate a white noise based on the energy level specified in the RTP CN packet received.

- New resources accounting for KT500 boards. Please refer to the API specification for more details.
- Added system variable KEYTRUNK_ROOT to help user application to locate KeyTrunk files. The system variable is not used by KeyTrunk Software.

Modified Items

- None

Fixed Issues

- PR-2490: G.726 16Kbps with VAD has a low level beating noise during the silence periods.
- PR-2626: KeyTrunk DHCP client does not work with Windows 2003 DHCP server if the requested the DHCP server IP address is specified.
- PR-2629 - "Craking" Noise Problem due to misaligned data on the H110 bus.
- PR-2636: KHwDeviceEcoPoll reports log errors fErrorH100OutOfSync and fErrorH100ClkA during the first poll pass
- PR2649 - RX filter can't be updated by the KTApiRtCnctModify function.
- PR-2674 - IP stack function in a multi-board and multi-threaded application can lead to cKTAPI_RC_IPSTACK_INVALID_EVENT_RESPONSE.
- PR-2680: KTApiMediaGetToneEvent could drop tones under heavy load.
- PR-2681 : Default Gateway is not returned by KTApiNetDhcpIpHostAdd
- PR-2682 : DHCP retransmit strategy (section 4.1) is not implemented
- PR-2683: Get error 0x702004 while closing RTP connection too fast.
- PR-2684: DTMF clamping does not seem to work
- PR-2701: DTMF 0 # and D are not removed when the DTMF tone removal is enabled.
- PR-2724: Tone clamping is not enabled when echo cancellation is activated.
- PR-2725: DTMF tone clamping produces a glitch when DTMF tone detection is activated.
- PR-2731: KeyTrunk send a RTP packet with the marker bit set before sending a CN packet.
- PR2723 - KT300 is not able to restore broken trunk.
- PR2770 - Function kTAPIChannelGetInfo does not return -1 for TSSTs for channels that are not bound to the TDM.

- PR2794 - In a certain situation the function call `KTApiChannelTxTsstBind()` returns the value `0x00708015`, and the `KTApiChannelRxTsstBind()` function returns the value `0x00737000`.
- PR2841 - Suspicious log errors are generated when the application simulates many RTP calls with automatic tone relay enabled.

KTR3.0.1

Added Features

- Added conference support.
- Added ATM AAL1 support.
- Added TDM synchronization
- Added DHCP support
- Added a static library version of the KeyTrunk API for developer that prefers to avoid DLL.

Modified Items

- Removed 2100Hz tone refresh events.

Fixed Issues

- PR-2525: Board version string is not accurate for KT500 boards.
- PR-2626: KeyTrunk DHCP client does not work with Windows 2003 DHCP server if the requested the DHCP server IP address is specified.
- PR-2627: `KTApiBoardPoll()` may returns the error `0x47000a04 cKTAPI_RC_TONE_RELAY_NO_TONE_TO_STOP`.

KTPR3.0.0 (since KTR2.2.7)

Added Features

- Added Media Object concept.
- Added new set of functions to manage time slot, RTP connections, media object binding.
- Added ADPCM+VAD on RTP connections

Modified Items

- Obsolete KTAiToneDetectionXxx functions.
- Obsolete KTApiBufferPlayoutXxxx functions.
- Obsolete KTAiToneRelayXxx functions and replaced by new RTP connection parameters and methods.
- Removed ulNetDelay field from tKTAPI_PDV_PARMS structure.
- Removed EchoCancellation parameters from RTP connections.

Fixed Issues

- PR-2526: The PDV buffer size was not computed properly. This was generating slip errors when the PDV buffer size was smaller than packet size.

SUPPORTED HARDWARE

This release supports the following hardware configuration:

Products		Description	H/W revision			
			1	2	3	
Multi-Chassis	PCI	KT300-MC	128 Channels, Multi-chassis RTP over Ethernet and VoIP.	✓	✓	✓
		KT301-MC	256 Channels, Multi-chassis RTP over Ethernet and VoIP.	✓	✓	✓
		KT301-MC-SCB	256 Channels, SCBus, Multi-chassis RTP over Ethernet and VoIP.		✓	✓
		KT302-MC	512 Channels, Multi-chassis RTP over Ethernet and VoIP.	✓	✓	✓
		KT303-MC	1008 Channels, Multi-chassis RTP over Ethernet and VoIP.	✓	✓	✓
	cPCI	KT312-MC	512 Channels, Multi-chassis RTP over Ethernet and VoIP.	✓	✓	✓
		KT313-MC	1008 Channels, Multi-chassis RTP over Ethernet and VoIP.	✓	✓	✓
		KT315-MC	2016 Channels, Multi-chassis RTP over Ethernet and VoIP.	✓	✓	✓
Media	PCI	KT500-MC	128 channels, VoIP or Multi-Chassis, Full Media Processing.	✓	✓	✓
		KT501-MC	256 channels, VoIP or Multi-Chassis, Full Media Processing.	✓	✓	✓
		KT502-MC	512 channels, VoIP or Multi-Chassis, Full Media Processing.	✓	✓	✓
		KT503-MC	1008 channels, VoIP or Multi-Chassis, Full Media Processing.	✓	✓	✓
	cPCI	KT511-MC	256 channels, VoIP or Multi-Chassis, Full Media Processing.	✓	✓	✓
		KT512-MC	512 channels, VoIP or Multi-Chassis, Full Media Processing.	✓	✓	✓
		KT513-MC	1008 channels, VoIP or Multi-Chassis, Full Media Processing.	✓	✓	✓

NOTES AND KNOWN PROBLEMS



WARNING

Application that are actually using KTAPl 2.2.7 and earlier may not compile if the are using Tone Detection, Echo Cancellation, Payout functions. Please read the API specification.



WARNING

Application that are actually using any earlier KeyTrunk releases shall be rebuild in order to use this new software release.



WARNING

Under Linux:

- Make sure to uninstall the previous driver version before installing this new driver version.
-

- The **Red Hat Linux 9.0** package:
 - Has been tested with Linux **kernel 2.4.20-8**;
 - Provides a **static library** built with **gcc 3.2.2-5**.
- The **Red Hat Enterprise Linux 4** package:
 - Has been tested with Linux **kernel 2.6.9-42EL**;
 - Provides a **static library** built with **gcc 3.4.6-3**.
- TDM clock generation (MASTER A, MASTER B or NETREF provider) is not supported for the following hardware even if the API does not return an error code:
 - KT300 hardware revision 1
 - KT500 hardware revision 1
 - KT310 hardware revision 1
 - KT510 hardware revision 1
- RTCP related fields (Cnames...) are not returned by the KTAPlRtpCnctGetInfo function.
- Changing an Ethernet trunk's destination MAC address is not supported
- PCI boards (T17-XXXXX) using PCI firmware older than version 14 (or 0x0E) must be updated. See Firmware update section for more detail.
- cPCI boards (T18-XXXXX) using PCI firmware older than version 15 (or 0x0F) must be updated. See Firmware update section for more detail.
- Don't use RTP connection with ulRxFilterType set to cKTAPl RTP_CNCT_RX_FILTER_NONE.

- PR-2292: Receive the error log “KNetMgmtRecvPackets()” every 12 hours or so.
- PR-2418: The driver ktw2k_driver.sys may prevent Windows from entering standby state.
- PR-2427: Under stress condition KTApiUdpSocketRxReceive() fail to transmit Rx packet and stayed stuck in PENDING state.
- PR-2489: VAD may cuts off tones if the tone stays for more than 2 seconds.
- PR-2519 : RTP stats ulUdpChecksumErrCnt increments when no packets are received
- PR-2579: KT513-IP-MED (cPCI 1008 channels) hardware revision 1 supports only 768 full duplex channels. . Refers to user guide to identify hardware revision.
- PR-2628: KTAPI does not perform packet per second validation. A KeyTrunk does not support more than ~100,000 pps.
- PR-3133: Rout Enable Noise Reduction is not available.
- PR-3207: ATM and Ethernet modes are exclusive.

FIRMWARE UPDATE

KeyTrunk boards shipped prior to this new API release must be updated to new firmware software.

The firmware version must be **version 0x010E (minor version 0x01 and major version 0x0E) for PCI boards** and **version 0x0F0F (minor version 0x0F and major version 0x0F) for cPCI boards**. The firmware version may be retrieved using the `KTApiBoardGetVersion` command.

Kallastra provides a Windows console program, `ktupdt`, in order to update the firmware of a KeyTrunk board.

The firmware file is `pci_t017_xxx.xsvf` or `pci_t018_xxx.xsvf`, where `xxx` is the major version of the firmware in decimal.



WARNING

The `ktupdt` application updates critical firmware on the board. The board may stop working if the application is interrupted in the middle of the update process. Don't reset or power down your PC during the update process.

Note: `ktupdt` has been tested on PCs running at 3.2GHz (Single and Dual CPU) or slower.

The following procedure describes how to update the firmware using the `ktupdt` program:

1. If not already done, install the KeyTrunk driver as explained in the user guide.
2. Open a Command Prompt window.
3. Change the current directory to `<KEYTRUNK_ROOT>/bin` (example: `cd /usr/keytrunk/bin`). Where `<KEYTRUNK_ROOT>` is the base directory where the release 6.0.0 package has been installed.
4. Run the `ktupdt` program without arguments: **`ktupdt<enter>`**
5. Once started, the program shows the list of KeyTrunk boards installed in the system and it asks for a confirmation before starting the update process.
6. Press **'Y'** to start or press **'N'** to cancel the update process and let the program run until the end. The following shows the output of the program.

KTAPI KeyTrunk Board Update utility program \$Kallastra_Release: KT-R 6.0.0 T0 \$

Copyright (c) 2003-2007 Kallastra Inc. All rights reserved.

```
+-----+-----+-----+-----+
| ID | PCI bus:slot | Options | Serial Number and version
+-----+-----+-----+-----+
| 0 | 2: 2 | 0x000021A0 | T17-00099/3AD
| | | | ~Board=KT503-AE-IP-MED
| | | | ~PCI-MII FPGA Id/Ver.=0x0017/0x000c
| 1 | 2: 3 | 0x000021A0 | T17-00053/2AC
| | | | ~Board=KT503-AE-IP-MED
| | | | ~PCI-MII FPGA Id/Ver.=0x0017/0x000c
+-----+-----+-----+-----+
```

Detected 2 KT board(s)

*** WARNING ***

The ktupdt application updates critical firmware on the board.
The board may stop working if the application is interrupted in
the middle of the update process. Don't reset or power down
your PC during the update process.

Note: ktupdt has been tested on PCs running at 2.8GHz or slower.

You have choose to update every boards listed above.

Do you want to continue? (y/n)y

Updating board 0 (bus=2, slot10)...

...use file[pci_t017_014.xsvf]

```
...progress [100%] 1321677 byte / 1321677 byte  
  
Board 0 updated successfully.  
  
Updating board 1 (bus=2, slot11)...  
  
...use file[pci_t017_014.xsvf]  
  
...progress [100%] 1321677 byte / 1321677 byte  
  
Board 1 updated successfully.  
  
Updated 2 board(s)  
  
*** IMPORTANT ***  
  
The new firmware will take effect only upon the next power cycle  
of the PCI bus. Reboot is not enough!  
  
Press ENTER to terminate
```

7. Power down the PC once the update process is done.
8. Power up the PC.
9. Open a console Window.
10. Set the working directory to **<KEYTRUNK_ROOT>/bin** (example: `cd /usr/keytrunk/bin`). Where **<KEYTRUNK_ROOT>** is the base directory where the release 6.0.0 package has been installed.
11. Run the `ktupdt` program with the `-v` arguments to show the version of the boards installed in the PC: `ktupdt -v<enter>`. The version of every firmware (PCI-MII FGPA) must be **0x010e** for PCI boards and **0x0f0f** for cPCI boards as highlighted below.

```
<KEYTRUNK_ROOT>/bin>ktupdt -v
```

```
KTAPI KeyTrunk Board Update utility program $Kallastra_Release: KT-R 6.0.0 TO $
```

```
Copyright (c) 2003-2007 Kallastra Inc. All rights reserved.
```

```
+-----+-----+-----+-----+
| ID | PCI bus:slot | Options | Serial Number and version
+-----+-----+-----+-----+
| 0 | 2: 2 | 0x000021A0 | T17-00099/3AD
| | | | ~Board=KT503-AE-IP-MED
| | | | ~PCI-MII FPGA Id/Ver.=0x0017/0x010e
| 1 | 2: 3 | 0x000021A0 | T17-00053/2AC
| | | | ~Board=KT503-AE-IP-MED
| | | | ~PCI-MII FPGA Id/Ver.=0x0017/0x010e
+-----+-----+-----+-----+
```

```
Detected 2 KT board(s)
```

```
Updated 0 board(s)
```

```
Press ENTER to terminate
```