
TANDBERG

Codec C Series

Software release notes

Software version TC3

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Contents

Contents	2
Document revision history.....	7
Introduction software version TC3.1.5	8
Prerequisites.....	8
Hardware compatibility.....	8
Changes and Improvements since previous version	10
System	10
New API xStatus	10
Introduction software version TC3.1.4	11
Prerequisites.....	11
Changes and Improvements since previous version	12
Video	12
System	12
Introduction software version TC3.1.3	13
Prerequisites.....	13
Changes and Improvements since previous version	14
GUI.....	14
Audio	14
API	14
Introduction software version TC3.1.2	15
Prerequisites.....	15
Changes and Improvements since previous version	16
Camera	16
Protocol	16
Video	16
Audio	16
Introduction software version TC3.1.1	17
Prerequisites.....	17
New features	18

Protocol	18
SIP	18
Changes and Improvements since previous version	19
Camera	19
Video	19
GUI	19
System	19
Protocol	19
API	20
Known Limitations	21
TANDBERG	21
POLYCOM	23
CISCO / RADVISION	24
Introduction software version TC3.1	25
New product abstract	25
TANDBERGEX90	25
Prerequisites	25
New features	26
Protocol	26
Callway	26
NAT	26
FECC	26
Maximum transmit and receive call rate	26
API commands	27
API configurations	27
API Status	28
Changes and Improvements since previous version	29
Camera	29
GUI	29
Video	29
Audio	30
System	30
Protocol	30
API configurations	30

Known Limitations	32
TANDBERG.....	32
POLYCOM	34
CISCO / RADVISION.....	35
Introduction software version TC3.0	36
New product abstract.....	36
TANDBERG Codec C40.....	36
TANDBERG Codec C60.....	36
Prerequisites.....	36
New features	38
System	38
Secure management	38
GPIO	38
Password security	38
Configuration profiles	38
Protocol	38
Encryption ON mode.....	38
Sony EVI-HD7V support.....	38
Factory reset command:	38
Multiway™ support for the TANDBERG C20	39
Video	39
Monitor overscan compensation.....	39
ClearPath.....	39
Improved packet loss resilience.....	40
Optimal definition profiles.....	40
New resolutions supported for encoding and decoding.....	41
Configurable main video and presentations bandwidth:	41
Letterbox removal.....	41
Improved video layout control.....	41
Audio	42

Equalizer	42
Audio video source association.....	42
Stereo echo cancellation.....	42
GUI.....	42
Today's bookings:.....	42
Confirm selection of video output resolution:.....	42
Frame rate indicator	42
Autocomplete:	43
Telephone call icon:	43
Russian Input method:	43
Do Not Disturb:	43
New menu languages:.....	43
Call rate selection:.....	43
New web interface	43
API commands.....	44
API configurations	45
Changes and Improvements since previous version	47
Camera	47
GUI.....	47
Video	47
Audio	48
System	48
Protocol	49
Web	49
API commands.....	49
API configurations	50
API status.....	51
Known Limitations	52
TANDBERG.....	52
POLYCOM	54
Interoperability testing.....	56
H.323 gatekeepers/traversal servers	56

SIP registrars/proxies	56
Gateway interoperability	56
MCU Interoperability.....	57
Streaming servers.....	58
Endpoint interoperability	58
Supplemental Notes	61
Software Filenames	61
References.....	61
Current RFC's and drafts supported in TC2.0.0.....	62
Disclaimers and notices	64

Document revision history

Revision 9	Release of TC3.1.5 software, patch release.
Revision 8	Release notes document change only. Added info about a resolved video issue since TC3.1.3.
Revision 7	Release of TC3.1.4 software, patch release.
Revision 6	Release of TC3.1.3 software, patch release.
Revision 5	Release of TC3.1.2 software, patch release.
Revision 4	Release of TC3.1.1 software, patch release.
Revision 3	Added maximum transmit and receive call rate
Revision 2	Release of TC3.1.0 software, minor version
Revision 1	Initial release of TC3.0.0 software

Introduction software version TC3.1.5

This release note describes the new features and capabilities included in the TANDBERG Codec software version TC3.1.5 released on 6th of July 2012.

Prerequisites

Before upgrading the systems ensure that:

- ▶ You are upgrading a system running TC software. The endpoints included are Codec C90, Codec C60, Codec C40, Codec C20, EX90 and the Profile series having one of the above mentioned codec's inside. EX90 is not recommended for this release due to lack of hardware compatibility for newer revisions of integrated cameras and Cisco Telepresence Touch 8.
- ▶ The TANDBERG T3 systems run the software version specified in the TANDBERG TCU release notes.
- ▶ When upgrading between two major releases i.e. from 2.x.x to 3.x.x a valid release key has to be applied after the upgrade (from 2.1.x and above you can enter the key before the upgrade). The key can be entered either through the API or the web interface.

Hardware compatibility

- ▶ New Nand Flash

The Cisco TelePresence endpoints are using a NAND flash memory for general storage and transfer of data. The endpoints running TC software will be manufactured with a new version of the flash memory. Endpoints having the new version of the flash memory must run software TC4.2.1 or later. Some previous TC software versions will be updated to support the new flash memory. Please check the release note to find if the new version of the flash memory is supported. If your endpoint does not have the CompatibilityLevel command it will not have the new flash memory installed.

The result returned when running the command will be either 0 or 1:

0 = The system does not have the new flash memory installed.

1 = The system has the new flash memory installed. If downgraded, it can only be downgraded to previous TC software versions having support for the new version of the flash memory.

Example:

```
xstatus SystemUnit Hardware Module CompatibilityLevel
*s SystemUnit Hardware Module CompatibilityLevel: 0
** end
```

- ▶ EX90 Camera sensor incompatibility

The new camera sensor in EX90's produced in April 2012 or later is not compatible with TC3.1.5

- ▶ Cisco TelePresence Touch 8 incompatibility
- ▶ The new hardware revision of the Cisco TelePresence Touch 8 is not backward compatible with releases before TC 5.1.3 or TC 4.2.4. There will be a lock preventing a downgrade of a system to a software version that is not supported by the connected touch panel. **If a codec running TC 3.1.5 is attempted to pair with a Touch panel of the new revision, pairing will fail.**
- ▶ The new hardware revision of the CT Touch 8 has the following TAN numbers:

Cisco TelePresence EX60 and EX90	800-38887-01
Cisco TelePresence MX200 and MX300	800-38886-01
Cisco TelePresence SX20/C-series/Profile series	800-38885-01

- ▶ The TAN number can be found on the back of the Cisco TelePresence Touch 8 panel on the sticker positioned in the upper right corner.



Changes and Improvements since previous version

System

- ▶ Support for new NAND flash

New API xStatus

- ▶ xStatus SystemUnit Hardware Module
 - Added parameter 'Compatibilitylevel'

Camera

With the TC3.1.5 release, the PrecisionHD 1080p 12x camera will automatically be upgraded to camera software release ID40068. Included in this release is:

- ▶ Fix for HDMI instability in some high frequency scenes

With the TC3.1.5 release, the PrecisionHD 1080p 4x camera will automatically be upgraded to camera software release ID10110. Included in this release is:

- ▶ Green tinge on color is resolved
- ▶ Color shift during mirror image is fixed
- ▶ Brightness is tuned

Note: Daisy chained cameras will not be automatically upgraded. They must be connected as the first camera or enabled with Ethernet ([How to upgrade PrecisionHD cameras over ethernet](#)) to be upgraded.

Introduction software version TC3.1.4

This release note describes the new features and capabilities included in the TANDBERG Codec software version TC3.1.4 released on 7th of March 2011.

Prerequisites

Before upgrading the systems ensure that:

- ▶ You are upgrading a system running TC software. The endpoints included are Codec C90, Codec C60, Codec C40, Codec C20, EX90 and the Profile series having one of the above mentioned codec's inside.
- ▶ The TANDBERG T3 systems run the software version specified in the TANDBERG TCU release notes.
- ▶ When upgrading between two major releases i.e. from 2.x.x to 3.x.x a valid release key has to be applied after the upgrade (from 2.1.x and above you can enter the key before the upgrade). The key can be entered either through the API or the web interface.

Changes and Improvements since previous version

Video

- ▶ Fixed a LVDS synchronization issue during start up that could cause one of the active windows to not display any video. This window could be presentation, far end, selfview etc. (Ref. #75777).

System

- ▶ Added better support for new batch of components (Ref. #87232).
 - If you need to downgrade systems shipped with TC4.0.4 or later software, you must downgrade to this release (TC3.1.4), to avoid long reboot cycles, or in very rare occasions, that the system does not boot up at all.

Introduction software version TC3.1.3

This release note describes the new features and capabilities included in the TANDBERG Codec software version TC3.1.3 released on 12th of November 2010.

Prerequisites

Before upgrading the systems ensure that:

- ▶ You are upgrading a system running TC software. The endpoints included are Codec C90, Codec C60, Codec C40, Codec C20, EX90 and the Profile series having one of the above mentioned codec's inside.
- ▶ The TANDBERG T3 systems run the software version specified in the TANDBERG TCU release notes.
- ▶ When upgrading between two major releases i.e. from 2.x.x to 3.x.x a valid release key has to be applied after the upgrade (from 2.1.x and above you can enter the key before the upgrade). The key can be entered either through the API or the web interface.

Changes and Improvements since previous version

GUI

- ▶ OSD (On Screen Display) completely removed if the product type is T3.

Audio

- ▶ A new experimental echo cancelling filter for T3.
- ▶ Fixed an issue that could cause the busy tone to continue to play after rejecting an incoming call (ref. #83902)

API

- ▶ xConfiguration Experimental Audio Input Microphone [1..8] EchoControl ResidualEchoMasking: <Normal/Aggressive>
 - Will be able to set the echo cancelling filter for T3 to aggressive.

Introduction software version TC3.1.2

This release note describes the new features and capabilities included in the TANDBERG Codec software version TC3.1.2 released on 20th of September 2010.

Prerequisites

Before upgrading the systems ensure that:

- ▶ You are upgrading a system running TC software. The endpoints included are Codec C90, Codec C60, Codec C40, Codec C20, EX90 and the Profile series having one of the above mentioned codec's inside.
- ▶ The TANDBERG T3 systems run the software version specified in the TANDBERG TCU release notes.
- ▶ When upgrading between two major releases i.e. from 2.x.x to 3.x.x a valid release key has to be applied after the upgrade (from 2.1.x and above you can enter the key before the upgrade). The key can be entered either through the API or the web interface.

Changes and Improvements since previous version

Camera

With the TC3.1.2 release, the PrecisionHD 1080p camera will automatically be upgraded to camera software release ID40062. Included in this release is:

- ▶ Improved the focus trying to avoid focusing on the background.
- ▶ Several improvements to image tuning. Parameter settings for noise filtering, bad pixel concealment and edge enhancement have been tuned for different lighting conditions.

Note: Daisy chained cameras will not be automatically upgraded. They must be connected as the first camera or enabled with Ethernet ([How to upgrade PrecisionHD cameras over ethernet](#)) to be upgraded.

Protocol

- ▶ Fixed an issue causing failure of registration to alternate gatekeepers (ref. #78641).

Video

- ▶ Improved analog detection for DVI-I input (ref. #80812).

Audio

- ▶ Fixed an issue causing a TANDBERG EX90 to sometimes not detect the headset after reboot (ref. 79742).

Introduction software version TC3.1.1

This release note describes the new features and capabilities included in the TANDBERG Codec software version TC3.1.1 released on 13th of July 2010.

Prerequisites

Before upgrading the systems ensure that:

- ▶ You are upgrading a system running TC software. The endpoints included are Codec C90, Codec C60, Codec C40, Codec C20, EX90 and the Profile series having one of the above mentioned codec's inside.
- ▶ The TANDBERG T3 systems run the software version specified in the TANDBERG TCU release notes.
- ▶ When upgrading between two major releases i.e. from 2.x.x to 3.x.x a valid release key has to be applied after the upgrade (from 2.1.x and above you can enter the key before the upgrade). The key can be entered either through the API or the web interface.

New features

Protocol

SIP

- ▶ Added support for VCS clustering. The system will now be able to receive a list of SIP servers from a DNS query. This will allow for load balancing and failover when using SIP.
- ▶ Added support for TLS verify. The system will now verify the certificate of the SIP server if configured.

Changes and Improvements since previous version

Camera

With the TC3.1.1 release, the PrecisionHD 1080p camera will automatically be upgraded to camera software release ID40061. Included in this release is:

- ▶ Improvements to auto focus, especially at zoomed in positions.

Note: Daisy chained cameras will not be automatically upgraded. They must be connected as the first camera or enabled with Ethernet ([How to upgrade PrecisionHD cameras over ethernet](#)) to be upgraded.

Video

- ▶ Fixed an issue causing the HDMI transmitter to sometimes never wake up from sleep (ref #77564).

GUI

- ▶ Fixed an issue where the 'InTouch' input device could become unresponsive after using the 'System Information' or 'Call Status' Pages (ref. #78347).
- ▶ French translations have been updated.

System

- ▶ Changed default value of 'Software Upgrade Mode', to off. This will prevent the system from regularly trying to reach a server in Norway looking for upgrades (ref. #78451).
- ▶ Fixed an issue where it is not possible to save IP settings when changing from DHCP to static. (ref. #77883)
- ▶ Fixed an issue where audio would leak between headphone mode and speaker when receiving a call. (ref. #78622)

Protocol

- ▶ Fixed an issue causing the unit to never try to re-register on SIP when placing a call using local authentication towards a VCS. The problem could occur if you placed a call that was never answered (ref. #78202)
- ▶ Fixed an issue causing the EX90 to reboot if you were presenting towards a site, while another site resumes a call that was put on hold (ref. #79585).

API

- ▶ xStatus SystemUnit ProductPlatform
 - Will now return 'EX90' instead of 'Unknown' for the TANDBERG EX90.

Known Limitations

TANDBERG

Ref. ID	Equipment	Limitations
CSCua85985	Any TC 3.1.x	Using DVI input with YCbCr the image may become green. Issue is fixed in TC4.2.1
N/A	All sw versions	The VGA (640 x 480) resolution is currently not supported.
62204	TANDBERG PrecisionHD 1080p Camera all sw versions.	720p50, 720p30 and 720p25 output has no CRC included for HD-SDI. Depending on the device you connect the camera to, you may not get video using this format. The TANDBERG codec will support these formats.
	Ver. TC2.1.0 and above	Startup scripts will not work with Windows end of line. You must use Unix end of line to be able to run multiple commands. Most editors have the option to set which format to use. If you use Notepad ++, you can set Unix format in the Settings/Preferences menu.
67092	Ver. T2.1.0 and above.	Composite and S-Video video input is shaking.
76195	Ver. TC3.0.0 and above	The composite video output of the C60 and C90 may flash purple from time to time.
76765	Ver. Any	You cannot dial into a gatekeeper or SIP registrar without being registered, using the format endpoint@domain or endpoint@ipaddress.
	Ver. Any	If you run cascaded cameras and the chained cameras are running an old camera code, we have seen that only zoom works when trying to control the chained camera. The solution is to connect the cascaded camera as the first camera in the chain so that the camera is detected and upgraded by the codec.
	Ver. Any	HD-SDI may not work with cables shorter than 3 meters. This is due to a jitter issue.
	Ver. Any	If you turn off H.323 as the protocol but leave default protocol as H.323 you will be unable to make outgoing calls unless you edit the URI to include 'sip:' in front of the number or change the default call protocol to SIP.

Ref. ID	Equipment	Limitations
66993	Ver. TC3.0 and above	The TANDBERG Codec will reduce the presentation resolution if you are unable to sustain a minimum of 1 frame per second.
	Any	1920*1200p60 output resolution will run in DVI compatibility mode and hence audio cannot be transmitted over HDMI when using this resolution.
75341	Ver. TC3.0 and above	If you dial a TANDBERG 150 with sw version L5.1.1 or older with encryption setting set to 'On', you may not get audio in any direction.
75382	TC3.0.0 and above	The call tab on the web interface doesn't work properly with Opera. You can dial, but you will not get the call status.
75679	TC3.0.0 and above	The installed options listed in the web interface will always list all options as enabled. Check system information screen or use the API to read out these values.
75045	Any	When setting the H.323 id to "number.something@domain", the endpoint becomes unreachable. The workaround is to not let H.323 id start with a number.
	Any	TANDBERG C40 and TANDBERG C60 (rev. 1), will not provide proper analogue VGA output for any resolution of 1080 lines or more.
	Any	TANDBERG C20 will reduce its capability set when starting to transmit dual stream. When this is done, the main stream is at maximum able to transmit 720p30 for the remainder of the call.
	Any	TANDBERG C40 will reduce its capability set when using internal MultiSite. When this is done, the main stream is at maximum able to transmit w576p until all calls are disconnected.
	Any	TANDBERG C60 will reduce its capability set when using internal MultiSite. When this is done, the dual stream is at maximum able to transmit WXGA until all calls are disconnected.
79001	NA	If you add some contacts to My Contacts and the Codec is hard rebooted the added contacts will not be saved. Work around is to do a controlled shutdown.
77101	Any	It's been observed that audio will not work over HDMI when using a Panasonic TH-50PH11EK.

POLYCOM

Ref. ID	Equipment	Limitations
64418	C Series Ver. TC 1.0 and above (No Video Polycom VSX Ver. 9.0.5)	Currently if the video source 1 (Precision HD 1080p camera) is set to sharpness then the Polycom VSX will not display video as the TANDBERG codec will transmit w448p, which is not supported by the VSX. Workaround: Set Precision HD 1080p camera to motion.
N/A	C Series Ver. TC1.0 and above (No Video Polycom VSX Ver. 8.0 & 8.5)	The Polycom VSX may display distorted video from the TANDBERG codec. Workaround: Upgrade the Polycom VSX to software version 8.7 or higher.
61957	C20 Ver. TC2.1.0 and above (H.239 / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently, when H.239 is active from one of the TANDBERG codecs, the conference could be going into a faulty state, which will result in video dropping in and out.
61956	C Series Ver. TC2.1.0 and above (Video dropped In and Out / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently the video will intermittently drop in and out during a 2Mbps or 1152kbps, Voice Switching, H.239, AES conference with the Polycom MGC.
71590	C Series Ver. TC2.1.0 and above (FECC / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently Far End Camera Control (FECC) does not work with the Polycom MGC in a H.323 conference.

Ref. ID	Equipment	Limitations
71628	C Series Ver. TC2.1.0 and above (Secondary Connection (Audio Only) / Polycom MGC Ver. 9.0.3.1)	The TANDBERG codec will connect as a secondary connection (audio only) when connected to a H.323 128kbps or 256kbps, AES, H.239, Voice Switching and Continuous Presence conference in the Polycom MGC.
75582	C Series Ver. TC3.1.0 (Secondary Connection (Audio Only) / Polycom MGC Ver. 9.0.3.1)	In a Polycom MGC 128kbps H323 conference (Note: AES, FECC, H239 disabled in conference), the codec will briefly display video before dropping to secondary (audio only).
78247	C Series Polycom PVX 8.0.2.0235	Far End Camera Control (FECC) is currently not working as expected from a Polycom PVX Sw 8.0.2.0235.

CISCO / RADVISION

Ref. ID	Equipment	Limitations
78125	C Series Ver. TC 3.0 and above (No or Poor Video with Cisco IPVC 3500 MCU Ver. 5.7.0.0.21)	Currently the C Series endpoints could experience No or Poor video during a Cisco IPVC MCU conference. Both Cisco and TANDBERG are currently working to address this issue.

Introduction software version TC3.1

This release note describes the new features and capabilities included in the TANDBERG Codec software version TC3.1.0 released on 21th of May 2010.

New product abstract

TANDBERGEX90

The TC3.1.0 release introduces support for the new TANDBERG EX90. The TANDBERG EX90 revolutionizes personal telepresence...the first with absolute quality 1080p30 video, the easy-to-use inTouch interface and unmatched collaboration. For more information please visit: <http://www.tandberg.com> , where user documentation will be available for download.

Note: The TANDBERG EX90 requires software version TC3.1.0 or later.



Prerequisites

Before upgrading the systems ensure that:

- ▶ You are upgrading a system running TC software. The endpoints included are Codec C90, Codec C60, Codec C40, Codec C20, EX90 and the Profile series having one of the above mentioned codec's inside.
- ▶ The TANDBERG T3 systems run the software version specified in the TANDBERG TCU release notes.
- ▶ When upgrading between two major releases i.e. from 2.x.x to 3.x.x a valid release key has to be applied after the upgrade (from 2.1.x and above you can enter the key before the upgrade). The key can be entered either through the API or the web interface.

New features

Protocol

Callway

Support for TANDBERG's low cost subscription based service. Callway (<http://www.tandberg.com/callway>) delivers high-definition video and voice communications across the internet, connecting you with anyone who is using a standards-based video device, landline or mobile phone.

NAT

Network Address Translation (NAT) support in the videoconferencing system enables proper exchange of audio/video data when connected to an external videoconferencing system (when the IP traffic goes through a NAT router).

Off: The system will signal the real IP Address.

On: The system will signal the configured "NAT Address" in place of its own IP-address within Q.931 and H.245.

Auto: The system will try to determine if the "NAT Address" or the real IP-address should be used within signaling. This is done to make it possible to place calls to endpoints on the LAN as well as endpoints on the WAN.

Note: NAT does not work in conjunction with gatekeepers.

FECC

Far End Camera Control (FECC) is now supported over SIP by using Binary Floor Control Protocol (BFCP).

Maximum transmit and receive call rate

You can now specify the maximum transmit and receive call rate to be used per call. This can be very useful when the system is used with asymmetric WAN links like ADSL.

API commands

The commands in this section will be documented in the TANDBERG API Guide available for download at <http://www.tandberg.com> .

- ▶ xCommand Provisioning
 - Added argument “CancelUpgrade”
 - Added argument “CompleteUpgrade”
 - Added arguments “StartUpgrade AutoComplete”
- ▶ xCommand Video Layout
 - Added arguments “AutoModeRemote List”
 - Added arguments “AutoModeRemote Reset”
 - Added arguments “AutoModeRemote SetLayoutFamily”
 - Added “xConfiguration Experimental Audio Input Microphone Channel” to the API of C40 and C60. This will allow these units to send stereo from the microphones to the far end.

API configurations

The configurations in this section will be documented in the TANDBERG API Guide available for download at <http://www.tandberg.com> .

- ▶ xConfiguration Audio Input VideoAssociation MuteOnInactiveVideo
- ▶ xConfiguration Conference FarEndControl SignalCapability
- ▶ xConfiguration Conference MaxTransmitCallrate
- ▶ xConfiguration Conference MaxReceiveCallrate
- ▶ xConfiguration H323 NAT Mode
- ▶ xConfiguration H323 NAT Address
- ▶ xConfiguration Provisioning
 - Added argument “LoginName”
 - Added argument “Password”
 - Added argument “HttpMethod”
- ▶ xConfiguration Video OSD MyContactsExpanded

API Status

The status commands in this section will be documented in the TANDBERG API Guide available for download at <http://www.tandberg.com>.

- ▶ xStatus Provisioning
 - Added argument “Status”
 - Added argument “Reason”
 - Added argument “PendingUpgrade”
- ▶ xStatus Video Input SignalState

Changes and Improvements since previous version

Camera

With the TC3.1.0 release, the PrecisionHD 1080p camera will automatically be upgraded to camera software release ID40059. Included in this release is:

- ▶ Updated color correction data for E2 and E3 image sensors.
- ▶ Automatic White Balance (AWB) now adapts without limitation.
- ▶ Internal changes to AWB implementation.
- ▶ Fixed a minor issue with focus measurement readout.
- ▶ Support for brightness gradient level.
- ▶ Improved audio camera tracking module to fix issues with aliasing and angle estimate (this fix is only valid for cameras used together with a T3 system).

Note: Daisy chained cameras will not be automatically upgraded. They must be connected as the first camera or enabled with Ethernet ([How to upgrade PrecisonHD cameras over ethernet](#)) to be upgraded.

GUI

- ▶ Renamed “Dialtones” to “Touch Tones” (ref. #76246).
- ▶ Removed the “Not Registered” banner when unit is in “Direct Mode” as you then should not be registered (ref. #75867).
- ▶ Fixed an issue which could cause a white square to appear in the GUI when returning missed calls (ref. #75805).
- ▶ Fixed a memory leak which over time could make the GUI slow in responding (ref. 77579).

Video

- ▶ Fixed an issue that could get the video encoder to be unresponsive and cause an unexpected restart (ref. #76359).
- ▶ Improved video compositions to select sharpness as quality if one of the sources is set to sharpness. Previously only motion would be used in compositions (ref. #76184).
- ▶ Corrected an issue where extensive logging of invalid payload could cause an unexpected restart (ref. #77790).

Audio

- ▶ Corrected an issue where getting another incoming call using the C20, the current far end audio would be muted until you choose to reject or to accept the new incoming call (ref. #76013).
- ▶ Corrected an issue with decoding of AAC-LD 32 kHz as seen when connected to an Aethra endpoint (ref. 77436).

System

- ▶ Corrected an issue causing the system to send an autofocus command to the camera when waking up from sleep even if autofocus is set to off.
- ▶ Corrected an issue which could make the serial port unresponsive after some time if "LoginRequired" was set to "off" (ref. #76923).
- ▶ Improved the incoming call while in call alert to be more discrete (ref. #74659).
- ▶ Corrected an issue with duplex mismatch when the Ethernet speed was forced on a TANDBERG C20 endpoint (ref. #76040).

Protocol

- ▶ Fixed an issue with BFCP which would prevent the system to receive dual stream when using internal multisite and the other side was taking over the dual stream (ref. #66296).
- ▶ Fixed an issue preventing H.239 dual stream to work towards a Polycom VSX SW 9.0.5.2 when running at 768kbps or below (ref. #76583).
- ▶ Fixed an issue causing the system to down speed permanently to 153.6 kbps when joining a TANDBERG MPS conference (ref. #71406).
- ▶ Removed the option to accept second incoming call on C20 if MultiWay is not configured (ref. #77736).

API configurations

- ▶ xConfiguration Provisioning Mode
 - Added new setting "CallWay".
- ▶ xConfiguration Cameras Camera Flip
 - Added a new setting "Auto"
- ▶ xConfiguration Cameras Camera Mirror
 - Added a new setting "Auto"
- ▶ xConfiguration Audio Input VideoAssociation Mode

- This command is replaced with: “xConfiguration Audio Input VideoAssociation MuteOnInactiveVideo”

Known Limitations

TANDBERG

Ref. ID	Equipment	Limitations
N/A	All sw versions	The VGA (640 x 480) resolution is currently not supported.
62204	TANDBERG PrecisionHD 1080p Camera all sw versions.	720p50, 720p30 and 720p25 output has no CRC included for HD-SDI. Depending on the device you connect the camera to, you may not get video using this format. The TANDBERG codec will support these formats.
	Ver. TC2.1.0 and above	Startup scripts will not work with Windows end of line. You must use Unix end of line to be able to run multiple commands. Most editors have the option to set which format to use. If you use Notepad ++, you can set Unix format in the Settings/Preferences menu.
67092	Ver. T2.1.0 and above.	Composite and S-Video video input is shaking.
76195	Ver. TC3.0.0 and above	The composite video output of the C60 and C90 may flash purple from time to time.
76765	Ver. Any	You cannot dial into a gatekeeper or SIP registrar without being registered, using the format endpoint@domain or endpoint@ipaddress.
	Ver. Any	If you run cascaded cameras and the chained cameras are running an old camera code, we have seen that only zoom works when trying to control the chained camera. The solution is to connect the cascaded camera as the first camera in the chain so that the camera is detected and upgraded by the codec.
	Ver. Any	HD-SDI may not work with cables shorter than 3 meters. This is due to a jitter issue.
	Ver. Any	If you turn off H.323 as the protocol but leave default protocol as H.323 you will be unable to make outgoing calls unless you edit the URI to include 'sip:' in front of the number or change the default call protocol to SIP.
66993	Ver. TC3.0 and above	The TANDBERG Codec will reduce the presentation resolution if you are unable to sustain a minimum of 1 frame per second.

Ref. ID	Equipment	Limitations
	Any	1920*1200p60 output resolution will run in DVI compatibility mode and hence audio cannot be transmitted over HDMI when using this resolution.
75341	Ver. TC3.0 and above	If you dial a TANDBERG 150 with sw version L5.1.1 or older with encryption setting set to 'On', you may not get audio in any direction.
75382	TC3.0.0 and above	The call tab on the web interface doesn't work properly with Opera. You can dial, but you will not get the call status.
75679	TC3.0.0 and above	The installed options listed in the web interface will always list all options as enabled. Check system information screen or use the API to read out these values.
75045	Any	When setting the H.323 id to "number.something@domain", the endpoint becomes unreachable. The workaround is to not let H.323 id start with a number.
	Any	TANDBERG C40 and TANDBERG C60 (rev. 1), will not provide proper analogue VGA output for any resolution of 1080 lines or more.
	Any	TANDBERG C20 will reduce its capability set when starting to transmit dual stream. When this is done, the main stream will maximum be able to transmit 720p30 for the remainder of the call.
	Any	TANDBERG C40 will reduce its capability set when using internal MultiSite. When this is done, the main stream will maximum be able to transmit w576p until all calls are disconnected.
	Any	TANDBERG C60 will reduce its capability set when using internal MultiSite. When this is done, the dual stream will maximum be able to transmit WXGA until all calls are disconnected.
77101	Any	It's been observed that audio will not work over HDMI when using a Panasonic TH-50PH11EK.
77564	TC3.x	Sometimes the HDMI output doesn't power up after waking up from sleep. Typically seen when the monitor is set to standby by the remote control, and you turn back on the monitor next day and waking up the TANDBERG system. Re-plugging the HDMI cable will resolve this issue.
78202	TC3.x	The system may stop registering to the SIP server after authenticated call attempted. Seen when using local authentication with a TANDBERG VCS.

POLYCOM

Ref. ID	Equipment	Limitations
64418	C Series Ver. TC 1.0 and above (No Video Polycom VSX Ver. 9.0.5)	Currently if the video source 1 (Precision HD 1080p camera) is set to sharpness then the Polycom VSX will not display video as the TANDBERG codec will transmit w448p, which is not supported by the VSX. Workaround: Set Precision HD 1080p camera to motion.
N/A	C Series Ver. TC1.0 and above (No Video Polycom VSX Ver. 8.0 & 8.5)	The Polycom VSX may display distorted video from the TANDBERG codec. Workaround: Upgrade the Polycom VSX to software version 8.7 or higher.
61957	C20 Ver. TC2.1.0 and above (H.239 / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently, when H.239 is active from one of the TANDBERG codecs, the conference could be going into a faulty state, which will result in video dropping in and out.
61956	C Series Ver. TC2.1.0 and above (Video dropped In and Out / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently the video will intermittently drop in and out during a 2Mbps or 1152kbps, Voice Switching, H.239, AES conference with the Polycom MGC.
71590	C Series Ver. TC2.1.0 and above (FECC / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently Far End Camera Control (FECC) does not work with the Polycom MGC in a H.323 conference.
71628	C Series Ver. TC2.1.0 and above (Secondary Connection (Audio Only) / Polycom MGC Ver. 9.0.3.1)	The TANDBERG codec will connect as a secondary connection (audio only) when connected to a H.323 128kbps or 256kbps, AES, H.239, Voice Switching and Continuous Presence conference in the Polycom MGC.

Ref. ID	Equipment	Limitations
75582	C Series Ver. TC3.1.0 (Secondary Connection (Audio Only) / Polycom MGC Ver. 9.0.3.1)	In a Polycom MGC 128kbps H323 conference (Note: AES, FECC, H239 disabled in conference), the codec will briefly display video before dropping to secondary (audio only).
78247	C Series Polycom PVX 8.0.2.0235	Far End Camera Control (FECC) is currently not working as expected from a Polycom PVX Sw 8.0.2.0235.

CISCO / RADVISION

Ref. ID	Equipment	Limitations
78125	C Series Ver. TC 3.0 and above (No or Poor Video with Cisco IPVC 3500 MCU Ver. 5.7.0.0.21)	Currently the C Series endpoints could experience No or Poor video during a Cisco IPVC MCU conference. Both Cisco and TANDBERG are currently working to address this issue.

- ▶ When upgrading between two major releases i.e. from 2.x.x to 3.x.x a valid release key has to be applied after the upgrade (from 2.1.x and above you can enter the key before the upgrade). The key can be entered either through the API or the web interface.

New features

System

Secure management

- ▶ Complete secure communication towards TMS. HTTPS can be used for both TMS initiated and codec initiated communication.
- ▶ The ability to upload a trusted CA list is now supported.

GPIO

- ▶ The General Purpose Input Output (GPIO) is now enabled in TC3.
- ▶ Must be configured using the API.
- ▶ Only applicable for the TANDBERG C60 and C90.

Password security

- ▶ SHA-256 is now used to hash the passwords for the codec. Previously MD-5 was used. This is valid for all passwords except the SIP registrar or gatekeeper passwords.

Configuration profiles

- ▶ You can now store and load complete configuration profiles for the system.
- ▶ This function is available from softkeys within the “Advanced Configuration” menu.

Protocol

Encryption ON mode

Encryption can now be set to be constantly on. If set, only encrypted calls can join the conference, non-encrypted calls will be rejected/disconnected.

Sony EVI-HD7V support

Using the VISCA protocol you can connect the Sony EVI-HD7V camera and control it using the TANDBERG remote control.

Factory reset command:

- ▶ Will reset all configurations and passwords.
- ▶ All logs will be deleted.

- ▶ All uploaded files (wallpapers etc) will be deleted.
- ▶ Option keys and release keys will not be deleted.

Multiway™ support for the TANDBERG C20

- ▶ Multiway™ conferencing enables video endpoint users to introduce a 3rd party into an existing call. It can be used in the following situations:
 - You want to add someone else to your existing call.
 - You are called by a 3rd party while already in a call and you want to include that person in the call.
 - Multiway™ requires TANDBERG VCS X5 or later and a Codian MCU running version 3.1 or later.
 - Endpoints invited to join the Multiway™ conference must support the H.323 routeToMC facility message if in an H.323 call, or SIP REFER message if in a SIP call.
 - Multiway™ must be set up with a Multiway™ alias in the format: sip:your-alias@your-company.com or h323:your-alias@your-company.com.
 - For more information please have a look at the Multiway™ Deployment Guide available for download at <http://www.tandberg.com>

Video

Monitor overscan compensation

Support for monitor overscan compensation. Both video and GUI will be scaled to support monitors that do not support the ability to display an image in pixel-by-pixel mode. You should always check to see if your monitor supports the ability to not overscan an image before using this feature, as this will always provide the best image.

ClearPath

- ▶ As a technology preview we have included TANDBERGs upcoming technology for packet loss resilience.
 - Must be enabled using the API configuration: xConfiguration Experimental Conference [1..1] PacketLossResilience: <off/on>, or by using the Experimental menu in the GUI.

Note: The settings within the Experimental menu and API can be used as is. The Experimental API and menu will change in future versions.

- This technology is still under development and should only be used for demonstration purposes.
- Next revision of ClearPath will not be compatible with the one available in this release.
- Will only work between two C Series codecs running TC3.
- Must be enabled on both sides.
- You should dial on SIP when testing ClearPath as H.323 calls detecting packet loss will currently downspeed.

Improved packet loss resilience

The packet loss concealment has been improved, which provides noticeable better performance over previous software versions in packet loss environments.

Note: Not to be confused with ClearPath.

Optimal definition profiles

- ▶ Each video input can now be configured to allow different optimal definition profiles. Selections include:
 - A setting to set when to prefer 60 frames per second over 30 frames per second. You can set from which resolution you should start to use 60fps. The selections available are: 512*288, 768*448, 1024*576, 1280*720 or never.
 - You can also set a profile level, which tells your system how good lighting you have in your room. This setting will influence the encoded image, the better lighting in the room the higher resolution you can encode at a lower bandwidth. The reason behind this is that more/better light will decrease the noise in the picture. Noise will be looked upon in the encoder as movement and hence you have much less to encode when the light conditions are optimal. You can choose between three profiles:
 - Normal: Default behavior. Will give acceptable video quality with almost any light environment, but selects resolutions rather conservative. 720p60 will be selected from 2240Kbps.
 - Medium: Will select a higher resolution at some bandwidths and gives acceptable video quality in a decent lit room. 720p60 will be selected from 1472Kbps.
 - High: Selects high resolutions quite aggressively, and will only give acceptable video quality in rooms with near daylight conditions. 720p60 will be selected from 1152Kbps.
 - These above settings will only work for camera setting "Motion".

New resolutions supported for encoding and decoding

- ▶ The following resolutions has been extended to the set of supported resolutions for encoding and decoding:
 - WUXGA (1920*1200). This resolution has previously been supported as input but not been sent to the far end without downscaling.
 - Only applicable for the TANDBERG C60 and C90.
 - WXGA+ (1440*900). This resolution has previously been supported as input but not been sent to the far end without scaling.
 - The TANDBERG C20 and C40 are limited to WXGA in the dual stream.

Configurable main video and presentations bandwidth:

- ▶ You can set the weight for the main channel and the presentation channel. The default is 5 for both channels, thus leaving up to 50% of the total bandwidth available for the presentations channel. By reducing the weight for the presentation channel and increasing it for the main channel, the system will use more of the total call rate for the main channel and less for the presentation channel.
 - The presentation channel has now two modes:
 - Dynamic (default): Same behavior as before. The main channel can use all capacity of the call rate until you start presentation (dual stream), the main channel will then be reduced to leave bandwidth available for the dual stream.
 - Static: The presentation channel will have reserved bandwidth from the start of the call even if it is not used. So if you place a 2Mbps call and the default weighting is used, you will never use more than about 1Mbps for the main stream video.

Letterbox removal

The system will detect letterboxing or pillar boxing and scale the image to fit the screen. For instance if the system receives a 4/3 image with letterboxing (16/9), it will automatically scale the image to fit the entire screen.

Improved video layout control

- ▶ It is now possible to configure which layout family to be used as default in any system state. This will among other things allow having default self view on the second monitor for dual monitor systems.
 - This functionality has to be configured using the API (dataport).

Audio

Equalizer

- ▶ Audio equalizer, available in the API and the TANDBERG Audio Console.
 - Supported systems, C40, C60 and C90
 - Can be turned on and off from the GUI, but the equalizer values must be set using the API.

Audio video source association

- ▶ When set to on, you have the ability to associate an audio input to a video input, meaning the audio input will only be active when that video source is active.
- ▶ Available for the C40, C60 and C90 system.

Stereo echo cancellation

- ▶ Only available for the C90.
- ▶ Experimental setting.
- ▶ Limited to 4 microphones.

GUI

Today's bookings:

Systems provisioned by the TANDBERG Management System (TMS) can display today's current bookings in the GUI.

Confirm selection of video output resolution:

When changing the output resolution, the system will now prompt you if you want to keep the selected resolution. In the event that the monitor doesn't support the new selected resolution, no prompt will be shown; selection will time out and thus the system will revert to the previous resolution.

Frame rate indicator

- ▶ The call status screen will now include frame rate, thus making it easy to see if you are sending/receiving 30 or 60 frames per second.
 - As this is just an indicator and not a proper frame rate counter, it will not show accurate sent or received frame rate. However you will be able to see if the system is now sending or receiving 60 frames per second.

Autocomplete:

When starting to type in a number in the call dialog box, it will now provide matches from recent calls, corporate phonebook and local contacts.

Telephone call icon:

A telephone call icon will now be displayed along with the telephone number when combined with a video call or presentation.

Russian Input method:

- ▶ When Cyrillic is selected as input method, Russian can be used as multimap.
- ▶ Russian remote control will be available at the same time as the TC3.0 release.

Do Not Disturb:

- ▶ A proper icon will now be displayed in the lower right corner, when do not disturb is active.
- ▶ A text box reminding you that 'Do not disturb' is active will be presented in the middle of the screen, if you have no menus or presentation active.
- ▶ Do not disturb can be activated by holding down the disconnect key until a dialog box appears.

New menu languages:

- ▶ Finnish
- ▶ Traditional Chinese
- ▶ Portuguese Brazilian
- ▶ Polish
- ▶ Danish
- ▶ Dutch

Call rate selection:

The soft button to select call rate is now available from the 'Enter contact' field in the call dialog box.

New web interface

TC 3 includes a new web interface with the possibility to:

- ▶ Check system info
- ▶ Upgrade software
 - Add release key

- Add option key
- ▶ Configure the system using the advanced configuration
- ▶ Upload custom wallpaper using png format.
- ▶ Place calls
- ▶ See call status
- ▶ Upload Certificates
- ▶ Download XML files
- ▶ Download system logs

API commands

The commands in this section will be documented in the TANDBERG API Guide available for download at <http://www.tandberg.com> .

- ▶ xCommand Audio Equalizer List
- ▶ xCommand Audio Equalizer Update
- ▶ xCommand GPIO ManualState Set
- ▶ xCommand SystemUnit ConfigurationProfile Change
- ▶ xCommand SystemUnit ConfigurationProfile Remove
- ▶ xCommand SystemUnit ConfigurationProfile SaveCurrentConfigurationAs
- ▶ xCommand SystemUnit ConfigurationProfile List
- ▶ xCommand SystemUnit ConfigurationProfile CancelChange
- ▶ xCommand SystemUnit FactoryReset
- ▶ xCommand Video Layout AutoMode SetLayoutFamily
- ▶ xCommand Video Layout AutoMode Reset
- ▶ xCommand Video Layout AutoMode List
- ▶ xCommand Message
 - Added argument "Alert Display"
 - Added argument "Alert Clear"
 - Added argument "Prompt Display"

- Added argument “Prompt Clear”
- Added argument “Prompt Response”

API configurations

- ▶ xConfiguration Audio Input Microphone
 - Added the argument “Equalizer Mode” and “Equalizer ID”
- ▶ xConfiguration Audio Input Line
 - Added the argument “Equalizer Mode” and “Equalizer ID”
- ▶ xConfiguration Audio Output Line
 - Added the argument “Equalizer Mode” and “Equalizer ID”
- ▶ xConfiguration Audio Input
 - Added the argument “VideoAssociation Mode” and “VideoAssociation VideoInputSource” for HDMI [3, 4], line [1..4] and microphone [1..8].
- ▶ xConfiguration Cameras
 - Added the argument “PowerLine Frequency”
 - Added the argument “DHCP”
- ▶ xConfiguration Conference
 - Added the argument “MicUnmuteOnDisconnect”
 - Added the argument “VideoBandwidth Mode”
 - Added the argument “ VideoBandwidth MainChannel Weight”
 - Added the argument “VideoBandwidth PresentationChannel Weight”
 - Added the argument “Encryption Mode <on/off/BestEffort>”
- ▶ xConfiguration
 - Added the argument “GPIO Pin”
 - Added the argument “Phonebook Server”
- ▶ xConfiguration NetworkServices HTTPS
 - Added the argument “VerifyServerCertificate”
- ▶ xConfiguration Provisioning ExternalManager

- Added the argument "Protocol"
- ▶ xConfiguration Video Input Source
 - Added the argument "OptimalDefinition Profile"
 - Added the argument "OptimalDefinition Threshold60fps"
- ▶ xConfiguration Video Output
 - Added the argument "OverscanLevel"
- ▶ xConfiguration Video OSD
 - Added the argument "TodaysBookings"
 - Added the argument "InputMethod InputLanguage"
 - Added the argument "InputMethod Cyrillic"

Changes and Improvements since previous version

Camera

With the TC3.0.0 release, the PrecisionHD 1080p camera will automatically be upgraded to camera software release ID40056. Included in this release is:

- ▶ Ability to set DHCP to on over VISCA.
- ▶ Added VISCA commands for changing integration time manually between 50 and 60Hz.
 - To be used if the camera is not able to detect the power frequency.
 - Typically this setting must be used if the power frequency is not stable 50 or 60Hz.

GUI

- ▶ Improved multitap responsiveness.
- ▶ Faster phonebook search.
- ▶ Corrected the input field of 802.1x to allow the use of upper case characters (ref. #67962)
- ▶ Increased the preset selection in the GUI from 10 to 15.
- ▶ Fixed an issue causing the text “Add camera preset” to be cut off for some languages in the GUI (ref. #68145).
- ▶ Added the ability to change the HDMI audio input level from the GUI (ref. #69011).
- ▶ Fixed an issue causing an edited contact to not be saved, instead the old contact information was used (ref. #72464).
- ▶ Added the capability to use capital letters for system name, presets, passwords and aliases (ref. #65988)
- ▶ Fixed Swedish language translations in the recent call list (ref. #71360).
- ▶ Fixed several Norwegian translation errors (ref. #68900).
- ▶ Fixed the problem with %1 displayed in the call rate selection when German language was selected (ref. #73875)..

Video

- ▶ Fixed an issue that could get the video encoder to be unresponsive and cause an unexpected restart (ref. #70212).
- ▶ Fixed an issue that could cause zebra stripes when decoding the video (ref. #60656).

- ▶ Fixed an issue with receiving 1080p at high bitrates from a LifeSize system (ref. #67426).
- ▶ Removed the minimum threshold of 4 frames per second for the dual stream. This will allow for higher resolutions in the dual stream at low bandwidth calls (ref. #66993).
- ▶ The video output resolution for each output is now set to auto as default (ref. #64781).
- ▶ Fixed an issue causing H.264 from a TANDBERG Classic endpoint to freeze a short period of time every 15 seconds (ref. #72651).
- ▶ Removed encoding of WQCIF from the supported set of resolutions as it was causing interoperability issues against other vendors (ref. #71432).
- ▶ Fixed an issue causing the TANDBERG C20 to receive dual stream using H.263 instead of H.264 in a call towards another TANDBERG C Series endpoint at call rates above 2Mbps (ref. #72930).
- ▶ Fixed an issue causing green image from a Hisense MP800H HD player connected to one of the HDMI inputs (ref. #72457).
- ▶ Fixed an issue causing 1920*1200p60 output to be too dark when using analog VGA (ref. #63461).
- ▶ Corrected a problem with the HD-SDI driver that could give a bad video signal and cause an unexpected restart (ref. #73094).

Audio

- ▶ Fixed an issue that could cause the system to ignore the first press of the microphone mute button of the TANDBERG C20 (ref. #67010).
- ▶ Corrected an issue causing a TANDBERG C20 to stop receiving audio from a Codian conference once dual stream is active, and the call rate is 256kbps (ref. #73558).

System

- ▶ Corrected an issue causing the system to send an autofocus command to the camera when waking up from sleep even if autofocus is set to off.
- ▶ Corrected an issue causing the do not disturb function to malfunction on the TANDBERG c20 (ref. #70273)
- ▶ If the system is in presentation mode but with no signal from the presentation source and not in a call, it will now enter standby and turn off presentation when the configured standby delay has been reached (ref. #63503).
- ▶ Fixed an issue causing HTTPS to stop working if HTTP was disabled (ref. #67682)
- ▶ Fixed the ability to set Ethernet speed and duplex setting for the TANDBERG C20 (ref. #70243).

- ▶ Fixed an issue that could cause a custom wallpaper to be deleted after reboot of the system (ref. #67993).

Protocol

- ▶ Fixed several issues with BFCP (dual stream) using SIP.
- ▶ Fixed an issue causing the system to not negotiate audio if it receives an Invite with more than 20 audio formats (ref. #72088)
- ▶ Fixed an issue where the system would require a reboot to re-register to a gatekeeper in the case that the unit got a new IP address (ref. #65155)
- ▶ Fixed an issue which could cause the call rate to display incorrect value (ref. #60458)
- ▶ Improved the H.323 gatekeeper input field to allow DNS entries (ref. #55567)
- ▶ Fixed an issue causing the endpoint to not update the correct bandwidth used towards a gatekeeper after opening and closing the dual channel (ref. #71399).
- ▶ Fixed an intermittent issue causing the unit to not disconnect the call, when connected to an ISDN endpoint using the Codian ISDN GW and the ISDN endpoint disconnect the call (ref. #71990).
- ▶ Corrected an issue where dual stream usually could not be opened using SIP before 15 seconds had passed in a firewall traversal call (ref. #71182).
- ▶ Fixed an issue where dialing an interworked call from SIP to H.323 towards an MXP system with F8.1, will give no video on the MXP system (ref. #71181).

Web

- ▶ Corrected an issue that could get the web server to crash when upgrading software over HTTPS (ref. #64550).

API commands

- ▶ The commands in this section will be documented in the TANDBERG API Guide available for download at <http://www.tandberg.com> .
- ▶ xCommand Audio Sound Play:
 - Added the argument "Dial".
- ▶ xCommand Preset Store:
 - A description of the preset is no longer required.
- ▶ xCommand Video Layout Add:

- Added the argument “LayoutId”.
- This allows you to specify the layout id, thus avoiding the system to automatically generate this for you.
- ▶ xCommand Video Layout Frame Add:
 - Added the argument “LayoutId”.
 - This allows you to specify the layout id, thus avoiding the system to automatically generate this for you.
- ▶ xCommand Phonebook Contact Add:
 - Added the arguments “ImageURL” and “Title”.
 - This allows you to present an image with a title to each directory entry.
- ▶ xCommand Phonebook Contact Modify:
 - Added the arguments “ImageURL” and “Title”.
 - This allows you to present an image with a title to each directory entry.
- ▶ xCommand Phonebook Search SearchString:
 - Added results set for timeout: “ResultSet Error MessageType: Timeout
 - Search string is now optional.
- ▶ xCommand Camera Upgrade:
 - This command is removed.

API configurations

- ▶ xConfiguration Video Encoder Threshold60fps
 - This configuration is removed.
- ▶ xConfiguration SerialPort BaudRate
 - Added 57600, which was missing in the list of supported rates.
- ▶ xConfiguration Cameras Camera Flip
 - Added a new setting “Auto”
- ▶ xConfiguration Cameras Camera Mirror
 - Added a new setting “Auto”

API status

- ▶ xStatus Camera
 - Added “IpAddress” and “MacAddress”
- ▶ xStatus
 - Added “GPIO Pin 1..4 State”
- ▶ xStatus SIP Profile
 - Added “Proxy Status”
 - Added “Proxy Address”
 - Added “Secure”
 - Added “Verified”
 - Added “Authentication”
 - Added “ Registration Status”
 - Added “ Registration Reason”
 - Added “Registration URI”
- ▶ xStatus SystemUnit
 - Added “ProductPlatform”

Known Limitations

TANDBERG

Ref. ID	Equipment	Limitations
N/A	All sw versions	The VGA (640 x 480) resolution is currently not supported.
62204	TANDBERG PrecisionHD 1080p Camera all sw versions.	720p50, 720p30 and 720p25 output has no CRC included for HD-SDI. Depending on the device you connect the camera to, you may not get video using this format. The TANDBERG codec will support these formats.
	Ver. TC2.1.0 and above	Startup scripts will not work with Windows end of line. You must use Unix end of line to be able to run multiple commands. Most editors have the option to set which format to use. If you use Notepad ++, you can set Unix format in the Settings/Preferences menu.
67092	Ver. T2.1.0 and above.	Composite and S-Video video input is shaking. However some improvements have been made within TC2.0.
76195	Ver. TC3.0.0	The composite video output of the C60 and C90 may flash purple from time to time.
70174	Ver. Any	You cannot dial into a gatekeeper or SIP registrar without being registered, using the format endpoint@domain or endpoint@ipaddress.
	Ver. Any	If you run cascaded cameras and the chained cameras are running an old camera code, we have seen that only zoom works when trying to control the chained camera. The solution is to connect the cascaded camera as the first camera in the chain so that the camera is detected and upgraded by the codec.
	Ver. Any	HD-SDI may not work with cables shorter than 3 meters. This is due to a jitter issue.
	Ver. Any	If you turn off H.323 as the protocol but leave default protocol as H.323 you will be unable to make outgoing calls unless you edit the URI to include 'sip:' in front of the number or change the default call protocol to SIP.
66993	Ver. TC3.x	The TANDBERG Codec will reduce the presentation resolution if you are unable to sustain a minimum of 1 frame per second.

Ref. ID	Equipment	Limitations
74030	Ver. TC3.0.0	1920*1200p60 output resolution will remove the option "Add another participant" in the GUI. Internal MS will still work by dialling one site at the time.
	Any	1920*1200p60 output resolution will run in DVI compatibility mode and hence audio cannot be transmitted over HDMI when using this resolution.
74943	Ver. TC3.0.0	Currently you will not be able to start dual stream (H.239) after hold/resume against a MCU.
75341	Ver. TC3.x	If you dial a TANDBERG 150 with sw version L5.1.1 or older with encryption setting set to 'on', you may not get audio in any direction.
75382	TC3.0.0	The call tab on the web interface doesn't work properly with Opera. You can dial, but you will not get the call status.
75679	TC3.0.0	The installed options listed in the web interface may not be correct.
76013	TC3.0.0	If you get another incoming call using the C20, the current far end audio will be muted until you choose to reject or to accept the new incoming call.
75045	TC2.x.x-TC3.0.0	When setting the H.323 id to "number.something@domain", the endpoint becomes unreachable. The workaround is to not let H.323 id start with a number.
75805	TC3.0.0	If you have a missed call list of three different numbers, returning a call from this list will provide a white visible square on the screen. This square can be removed by opening and closing the call status screen.
	TC3.0.0	TANDBERG C40 and TANDBERG C60 (rev. 1), will not provide proper analogue VGA output for any resolution of 1080 lines or more.
	Any	TANDBERG C20 will reduce its capability set when starting to transmit dual stream. When this is done, the main stream will maximum be able to transmit 720p30 for the remainder of the call.
	Any	TANDBERG C40 will reduce its capability set when using internal MultiSite. When this is done, the main stream will maximum be able to transmit w576p until all calls are disconnected.
	Any	TANDBERG C60 will reduce its capability set when using internal MultiSite. When this is done, the dual stream will

Ref. ID	Equipment	Limitations
		maximum be able to transmit WXGA until all calls are disconnected.
71406	TC3.0.0	There is a problem with flow control towards a TANDBERG MPS J4.5. The MPS will flow control the bitrate down to 153,6kbps for sites that is not currently in any view. After this the C-series codec is unable to revert to original callrate and will remain at 153.6kbps for the remainder of the call.
76710	TC3.0.0	With secure management enabled, the endpoint will still send some HTTPS traps and external manager registrations messages if TMS cannot be authenticated. This will typically happen if the endpoints certificate is not signed by an authority listed in the TMSs CA list.

POLYCOM

Ref. ID	Equipment	Limitations
64418	C Series Ver. TC2.1.0 (No Video Polycom VSX Ver. 9.0.5)	Currently if the video source 1 (Precision HD 1080p camera) is set to sharpness then the Polycom VSX will not display video as the TANDBERG codec will transmit w448p, which is not supported by the VSX. Workaround: Set Precision HD 1080p camera to motion.
N/A	C Series Ver. TC2.1.0 (No Video Polycom VSX Ver. 8.0 & 8.5)	The Polycom VSX may display distorted video from the TANDBERG codec. Workaround: Upgrade the Polycom VSX to software version 8.7 or higher.
70677	C20 Ver. TC2.1.0-TC3.0.0 (Receive H.239 / Polycom RMX2000 Ver. 4.1.0.37)	During a 2Mb, H323, AES, H239, non-HD voice switching conference on the Polycom RMX2000, the C20 does not handle H.239 handoff very well. If you start H.239 from the various participants without stopping it first from the site currently transmitting, the C20 will eventually not receive any H.239.
67181	C Series	Currently there is no video displayed on the TANDBERG codec during a 384kbps, Continuous

Ref. ID	Equipment	Limitations
	Ver. TC2.1.0-TC3.0.0 (No Video / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Presence, H.239, AES, H.323 conference with the Polycom MGC MCU.
61957	C Series Ver. TC2.1.0-TC3.0.0 (H.239 / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently, when H.239 is active from one of the TANDBERG codecs, the conference could be going into a faulty state, which will result in video dropping in and out.
61956	C Series Ver. TC2.1.0-TC3.0.0 (Video dropped In and Out / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently the video will intermittently drop in and out during a 2Mbps or 1152kbps, Voice Switching, H.239, AES conference with the Polycom MGC.
71590	C Series Ver. TC2.1.0 –TC3.0.0 (FECC / Polycom MGC Ver. 8.0.2.6 & 9.0.3.1)	Currently Far End Camera Control (FECC) does not work with the Polycom MGC in a H.323 conference.
71628	C Series Ver. TC2.1.0-TC3.0.0 (Secondary Connection (Audio Only) / Polycom MGC Ver. 9.0.3.1)	The TANDBERG codec will connect as a secondary connection (audio only) when connected to a H.323 128kbps or 256kbps, AES, H.239, Voice Switching and Continuous Presence conference in the Polycom MGC.

Interoperability testing

The following systems have been tested and verified compatible with this software release.

H.323 gatekeepers/traversal servers

<i>Equipment</i>	<i>Software Revision</i>	<i>Comments</i>
TANDBERG Gatekeeper	N6.1	
TANDBERG Border Controller	Q6.1	Both Assent and H.460.18/.19 traversal technologies are supported
TANDBERG Video Communication Server (VCS)	X4.1, X4.2, X5	Both Assent and H.460.18/.19 traversal technologies are supported

SIP registrars/proxies

<i>Equipment</i>	<i>Software Revision</i>	<i>Comments</i>
TANDBERG Video Communication Server (VCS)	X5	

Gateway interoperability

<i>Equipment</i>	<i>Software Revision</i>	<i>Comments</i>
TANDBERG MPS Gateway	J4.5	
TANDBERG Gateway	G3.2	
TANDBERG Codian ISDN Gateway	2.0	

MCU Interoperability

<i>Equipment</i>	<i>Software Revision</i>	<i>Comments</i>
TANDBERG MPS	J4.5	
TANDBERG MCU	D3.10	
TANDBERGCodian 4210	4.0	
TANDBERG Codian 4520	4.0	
Polycom MGC50	9.0.3.1	<p>60 frames per second was disabled during the testing (Advanced Configuration/Video/Input/Source/Optimal Definition/Threshold60fps = Never).</p> <p>MGC conference is set to continuous presence, AES and H.239:</p> <p>Far End Camera Control is not working. Call rates down to 384kbps works fine. 384kbps and lower will experience loss of video.</p> <p>MGC conference set to voice switched, AES and H.239:</p> <p>Following conference rates does not work: 2Mbps, 1.4Mbps and 1.1Mbps and 128kbps.</p> <p>Far End Camera Control is not working.</p> <p>MGC conference is set to continuous presence, no AES and H.239:</p> <p>In a 256kbps conference, Encryption needed to be disabled for the C Series to display video; otherwise they would connect as audio only.</p>
Polycom RMX2000	5.0.0.46 with MPM+ card.	<p>60 frames per second was disabled during the testing (Advanced Configuration/Video/Input/Source/Optimal Definition/Threshold60fps = Never).</p> <p>A distorted wide bar is seen on the bottom of the screen of the site receiving dual</p>

<i>Equipment</i>	<i>Software Revision</i>	<i>Comments</i>
		stream. The TANDBERG C20 stops displaying main video in a conference using dual stream.

Streaming servers

<i>Equipment</i>	<i>Software Revision</i>	<i>Comments</i>
TANDBERG Content Server	S3.1, S4.0	

Endpoint interoperability

<i>Equipment</i>	<i>Software Revision</i>	<i>Protocol</i>	<i>Comments</i>
TANDBERG MXP	F8.2	H.323	
TANDBERG MXP	F7.2	H.323	
TANDBERG Personal Series	L5.1	H.323	
TANDBERG E20	TE2.1.0	SIP	
LifeSize Room 200	LS_RM2_4.2.5(4)	H.323	Dual stream (H.239) gives low frame. 720p60 is not possible.
LifeSize Room	LS_RM2_4.2.4(4)	H.323	Dual stream (H.239) gives low frame on call rates below 2000kbps.
LifeSize Room	LS_RM2_4.2.4(4)	SIP	Dual stream (BFCP) does not work.
LifeSize Express	LS_EX1_4.2.5(4)	H.323	Dual stream (H.239) gives low frame.
Sony PCS-1	03.41	H.323	Dual stream is limited to 1 FPS.
Sony TL50	2.42	H.323	Dual stream is limited to 1 FPS.

Equipment	Software Revision	Protocol	Comments
Sony PCS-XG80	2.04.00	H.323	Low frame rate from the Sony on lower frame rates. It's not possible to use 60 frames per second. Encryption does not work.
Sony PCS-XG80	2.04.00	SIP	Low frame rate from the Sony on lower frame rates. It's not possible to use 60 frames per second. Encryption does not work. Dual stream (BFCP) does not work.
Polycom FX	6.0.5	H.323	60 frames per second was disabled during the testing (Advanced Configuration/Video/Input/Source/Optimal Definition/Threshold60fps = Never). Dual stream (H.239) is not supported by the FX system.
Polycom VSX 7000	9.0.5.2	H.323	At call rate 768kbps dual stream (H.239) did not work. At call rate 512kbps and below the VSX does not display received video. Dual stream (H.239) will also have problems.
Polycom HDX 8000 HD	2.5.0.5	H.323	Dual stream (H.239) gives low frame. If 60fps is used we send w448p
Polycom HDX 8000 HD	2.5.0.5	SIP	Encryption does not work. Unable to send 60fps when using SIP. Dual stream (BFCP) does not work.
Polycom HDX 8000	2.0.2-235	H.323	Dual stream (H.239) gives low frame. If 60fps is used we send w448p
Polycom HDX 8000	2.0.2-235	SIP	Encryption does not work. Unable to send 60fps when using SIP. Dual stream (BFCP) does not work.

<i>Equipment</i>	<i>Software Revision</i>	<i>Protocol</i>	<i>Comments</i>
Polycom HDX 9004	2.5.0.1-3332	H.323	Dual stream (H.239) gives low frame. If 60fps is used we send w448p
Polycom HDX 8006	2.5.0.7-4032	H.323	60 frames per second was disabled during the testing (Advanced Configuration/Video/Input/Source/Optimal Definition/Threshold60fps = Never).
Polycom HDX 9004	2.5.0.1-3332	SIP	Encryption does not work. Unable to send 60fps when using SIP. Dual stream (BFCP) does not work.

Supplemental Notes

Software Filenames

The correct software filename is listed in the following table.

TANDBERG TC system	Software	Serial number range
AES Encryption	s52000tc3_0_0.pkg	All
No Encryption	S52000tcnc3_0_0.pkg	All

References

TANDBERG Website	http://www.tandberg.com/
TANDBERG FTP Site	http://ftp.tandberg.com/
TANDBERG Documentation	http://www.tandberg.com/docs

Current RFC's and drafts supported in TC2.0.0

- RFC 1889 RTP: A Transport Protocol for Real-time Applications
- RFC 2190 RTP Payload Format for H.263 Video Streams
- RFC 2327 SDP: Session Description Protocol
- RFC 2396 Uniform Resource Identifiers (URI): Generic Syntax
- RFC 2429 RTP Payload Format for the 1998 Version of ITU-T Rec. H.263 Video (H.263+)
- RFC 2617 Digest Authentication
- RFC 2782 DNS RR for specifying the location of services (DNS SRV)
- RFC 2833 RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals
- RFC 2976 The SIP INFO Method
- RFC 3016 RTP Payload Format for MPEG-4 Audio/Visual Streams
- RFC 3047 RTP Payload Format for ITU-T Recommendation G.722.1
- RFC 3261 SIP: Session Initiation Protocol
- RFC 3262 Reliability of Provisional Responses in SIP
- RFC 3263 Locating SIP Servers
- RFC 3264 An Offer/Answer Model with SDP
- RFC 3311 UPDATE method
- RFC 3361 DHCP Option for SIP Servers
- RFC 3420 Internet Media Type message/sipfrag
- RFC 3515 Refer method
- RFC 3550 RTP: A Transport Protocol for Real-Time Applications
- RFC 3581 Symmetric Response Routing
- RFC 3605 RTCP attribute in SDP
- RFC 3711 The Secure Real-time Transport Protocol (SRTP)
- RFC 3840 Indicating User Agent Capabilities in SIP
- RFC 3890 A Transport Independent Bandwidth Modifier for SDP
- RFC 3891 The SIP "Replaces" Header
- RFC 3892 Referred-By Mechanism
- RFC 3960 Early Media
- RFC 3984 RTP Payload Format for H.264 Video
- RFC 4028 Session Timers in SIP

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- RFC 4145 TCP-Based Media Transport in the SDP
 - RFC 4568 SDP:Security Descriptions for Media Streams
 - RFC 4574 The Session Description Protocol (SDP) Label Attribute
 - RFC 4582 The Binary Floor Control Protocol
 - RFC 4585 Extended RTP Profile for RTCP-Based Feedback
 - RFC 4587 RTP Payload Format for H.261 Video Streams
 - RFC 4629 RTP Payload Format for ITU-T Rec. H.263 Video
 - RFC 5168 XML Schema for Media Control
 - RFC 4796 The SDP Content Attribute
 - RFC 4583 SDP Format for BFCP Streams
 - RFC 5589: SIP Call Control Transfer
 - draft-ietf-avt-rtp-h264-rcdo-02
 - draft-ietf-avt-rtp-rfc3984bis-06
 - draft-ietf-sip-outbound-20: Managing Client Initiated Connections

Disclaimers and notices

The objective of this guide is to provide the reader with assistance in using and configuring this product. Product capabilities of TANDBERG and other manufacturers' products change over time and so the required configuration may be different from that indicated here. If you have any suggestions for changes to this document, please feed them back to TANDBERG through your TANDBERG Authorized Service Representative.

If you need technical support, please contact your TANDBERG Authorized Service Representative.

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